Pub. 988-0143-751

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FishEasy® 240

& FishEasy® 240 Portable

Fish-Finding & Depth-Sounding Sonars

Installation and Operation Instructions

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P.O. Box 669
Catoosa, OK USA 74015
Printed in USA.

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Notes

Introduction

Thank you for buying an Eagle® sonar! Your unit is a high-quality sonar designed for both professional and novice fishermen. All Eagle sonars have an automatic mode that finds and displays the bottom, fish, underwater structure and more – right out of the box. All you have to do is press the on (**PWR**) key.

However, if you want to fine-tune your unit, press the **MENU UP** key. The FishEasy™ 240 family has several powerful features you can control by scrolling through easy-to-use menus with the arrow and menu keys.

To get started with your Eagle sonar, first read the installation section. It contains instructions for mounting the sonar unit, the transducer and any optional accessories, such as a speed sensor.

Following recommended installation practices will pay off in optimum performance of your Eagle sonar. Improper installation can cause problems down the road, especially if the transducer is badly mounted.

After you've read the installation instructions, install the unit and accessories. Then, read the rest of the manual. The more you know about your sonar, the better it will work for you.

Take advantage of the Simulator feature. It allows you to practice operating your sonar before you get it in the water. And when you finally head for your favorite fishing hole, take this manual along for reference.

Capabilities and Specifications: FishEasy 240 Family

General

Case size: ..... 5.8" H x 4.3" W x 2.5" D (14.7 cm H x 10.8 cm W x 6.6 cm D) sealed, waterproof; suitable for saltwater use.

Display: ..... High-contrast Film SuperTwist LCD. Diagonal viewing area: 3.5" (8.9 cm).

Resolution: ..... 240 pixels (vert.) x 160 pixels (horiz.) resolution; 38,400 total pixels

Backlighting: ..... Amber LED backlit screen and keypad for night use.

Input power: ..... 10 to 17 volts DC.

Current drain: ..... 170 ma lights off; 240 ma lights on.

Back-up memory: ..... Built-in memory stores sonar settings when unit is turned off.

Sonar

Frequency: ..... 200 kHz.

Transducers: ..... A Skimmer® transducer comes packed with your unit. Its 20° cone angle offers a wide fish detection area of up to 60º with high sensitivity settings. Operates at boat speeds up to 70 mph (61 kts).

Transmitter: ..... 1500 watts peak-to-peak power (typical); 188 watts RMS power (typical).

Sonar sounding depth capability: ..... 800 feet (244 meters). Actual capability depends on transducer configuration and installation, bottom composition and water conditions. All sonar units typically read deeper in fresh water than in salt water.

Depth display: ..... Continuous digital readout.

Audible alarms: ..... Deep/shallow/fish.

Automatic ranging: ..... Yes, with instant screen updates.

Auto bottom track:.....Yes.

Zoom bottom track:.....Yes.

Split-screen zoom:.....Yes.

Surface water temp: .....Yes, built into transducer. Optional external temperature sensor or combo speed/temp sensor available.

Speed/distance log: .....Yes, with optional speed sensor.

This manual covers the FishEasy 240 and FishEasy 240 Portable. Both units operate the same way. The only difference between the two is that the portable unit includes a portable transducer and other items that enable portable use.

NOTICE!

The storage temperature for your unit is from -4 degrees to +167 degrees Fahrenheit (-20 degrees to +75 degrees Celsius). Extended storage in temperatures higher or lower than specified will damage the liquid crystal display in your unit. This type of damage is not covered by the warranty. For more information, contact the factory's Customer Service Department; phone numbers are inside the manual's back cover.

How Sonar Works

Sonar has been around since the 1940s, so if you already know how it works, skip ahead to the next segment on the typographical conventions used in this manual. But, if you've never owned a sonar fish finder, this segment will tell you the underwater basics.

Sonar is an abbreviation for SOund NAvigation and Ranging, a technology developed during World War II for tracking enemy submarines. A sonar consists of a transmitter, transducer, receiver and display. In simple terms, here's how it finds the bottom, or the fish:

The transmitter emits an electrical impulse, which the transducer converts into a sound wave and sends into the water. (The sound frequency can't be heard by humans or fish.) The sound wave strikes an object (fish, structure, bottom) and bounces back to the transducer, which converts the sound back into an electrical signal.

The receiver amplifies this return signal, or echo, and sends it to the display, where an image of the object appears on the scrolling sonar chart. The sonar's microprocessor calculates the time lapse between the transmitted signal and echo return to determine the distance to the object. The whole process repeats itself several times each second.

Transducer Installation

Preparations

The following shows the recommended sequence for installing the transducer:

CAUTION:

You should read over this entire installation section before drilling any holes in your vehicle or vessel!

1. Determine the approximate location for the sonar unit, so you can plan how and where to route the cables for the transducer and power. This will help you make sure you have enough cable length for the desired configuration.

2. Determine the approximate location for the transducer and its cable route.

3. Determine the location of your battery or other power connection, along with the power cable route.

4. Install the transducer and route the transducer cable to the sonar unit.

5. Route the power cable from the unit's location to an appropriate power source and connect it there.

6. Connect the transducer/power cable to the unit and mount the sonar unit on the bracket.

Installation

These instructions will help you install your Skimmer® transducer on a transom, on a trolling motor or inside a hull. Please read all instructions before proceeding with any installation.

Your Skimmer transducer typically comes packaged with a one-piece stainless steel bracket for mounting it to the transom of your boat. The

trolling motor mount uses a one-piece plastic bracket with an adjustable strap.

These are all "kick-up" mounting brackets. They help prevent damage if the transducer strikes an object while the boat is moving. If the transducer does "kick-up," the bracket can easily be pushed back into place without tools.

Depending on your sonar unit's connectors, your transducer cable may also have the sonar unit's power cable attached to it. If that is the case, be sure to install the transducer first, before connecting the power cable to a power source. See the instructions later in this manual for connecting the power cable to a battery or other power supply.

Read these instructions carefully *before* attempting the installation. Determine which of the mounting positions is right for your boat. Use extreme care if mounting the transducer inside the hull, because once it is epoxied into position, the transducer usually cannot be removed. ***Remember, the transducer installation is the most critical part of a sonar installation.***

Recommended Tools and supplies

If you prefer the option of routing the cable through the transom, you will need a 5/8" drill bit. Each transom mount requires use of a *high quality*, *marine grade* above- or below-waterline caulking compound.

NOTE:

The following installation types also call for these recommended tools and required supplies (supplies are *not* included):

Single-frequency transom installations

Tools include: two adjustable wrenches, drill, #29 (0.136") drill bit, flathead screwdriver (for mounting screws and their pilot holes). Supplies: none.

Single-frequency trolling motor installations

Tools: two adjustable wrenches, flat-head screwdriver. Supplies: plastic cable ties.

Shoot-through hull installations

Tools: these will vary depending on your hull's composition. Consult your boat dealer or manufacturer. Supplies: 100 grit sandpaper, specially formulated epoxy adhesive available from LEI (see ordering information on the inside back cover). A sandwich hull also requires polyester resin.

Selecting a Transducer Location

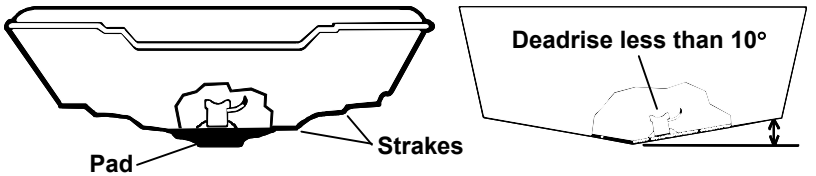
1. The location must be in the water at all times, at all operating speeds.

2. The transducer must be placed in a location that has a *smooth flow* of water at all times. If the transducer is not placed in a smooth flow of water, interference caused by bubbles and turbulence will show on the sonar's display in the form of random lines or dots whenever the boat is moving.

NOTE:

Some aluminum boats with strakes or ribs on the outside of the hull create large amounts of turbulence at high speed. These boats typically have large outboard motors capable of propelling the boat at speeds faster than 35 mph. Typically, a good transom location on aluminum boats is between the ribs closest to the engine.

3. The transducer should be installed with its face pointing straight down, if possible. *For shoot-thru applications:* Many popular fishing boat hulls have a flat keel pad that offers a good mounting surface. On vee hulls, try to place the transducer where the deadrise is 10° or less.

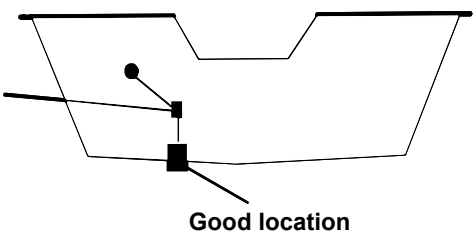


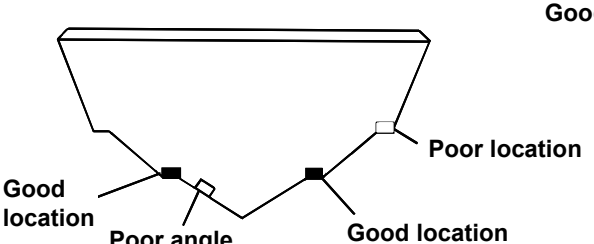
Left, vee pad hull; right, vee hull. A pod style transducer is shown here, but the principle is the same for Skimmers inside a hull.

4. If the transducer is mounted on the transom, make sure it doesn't interfere with the trailer or hauling of the boat. Also, don't mount it closer than approximately one foot from the engine's lower unit. This will prevent cavitation (bubble) interference with propeller operation.

5. If possible, route the transducer cable away from other wiring on the boat. Electrical noise from engine wiring, bilge pumps and aerators can be displayed on the sonar's screen. Use caution when routing the transducer cable around these wires.

CAUTION: Clamp the transducer cable to transom near the transducer. This will help prevent the transducer from entering the boat if it is knocked off at high speed.

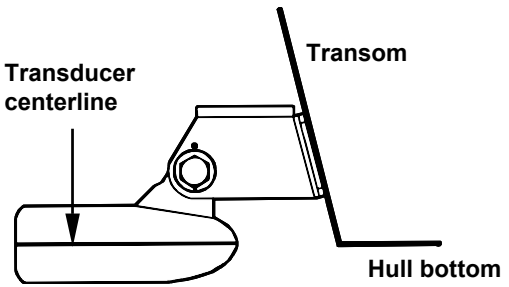




Good and poor transducer locations.

How low should you go?

For most situations, you should install your Skimmer transducer so that its centerline is level with the bottom of the boat hull. This will usually give you the best combination of smooth water flow and protection from bangs and bumps.



Align transducer centerline with hull bottom.

However, there are times when you may need to adjust the transducer slightly higher or lower. (The slots in the mounting brackets allow you to loosen the screws and slide the transducer up or down.) If you frequently lose bottom signal lock while running at high speed, the transducer may be coming out of the water as you cross waves or wakes. Move the transducer a little lower to help prevent this.

If you cruise or fish around lots of structure and cover, your transducer may be frequently kicking up from object strikes. If you wish, you may move the transducer a little higher for more protection.

There are two extremes you should avoid. Never let the edge of the mounting bracket extend below the bottom of the hull. Never let the bottom – the face – of the transducer rise above the bottom of the hull.

Shoot-Thru-Hull vs. Transom Mounting

In a shoot-thru-hull installation, the transducer is bonded to the *inside* of the hull with epoxy. The sonar "ping" signal actually passes through the hull and into the water. This differs from a bolt-thru-hull installa-

tion (often called simply "thru-hull"). In that case, a hole is cut in the hull and a specially designed transducer is mounted *through* the hull with a threaded shaft and nut. This puts the transducer in direct contact with the water.

Typically, shoot-thru-hull installations give excellent high speed operation and good to excellent depth capability. There is no possibility of damage from floating objects. It can't be knocked off when docking or loading on the trailer.

However, the shoot-thru-hull installation does have its drawbacks. First, some loss of sensitivity does occur, even on the best hulls. This varies from hull to hull, even from different installations on the same hull. This is caused by differences in hull lay-up and construction.

Second, the transducer angle cannot be adjusted for the best fish arches. This can be a problem on hulls that sit with the bow high when at rest or at slow trolling speeds.

Third, a transducer ***CAN NOT*** shoot through wood and metal hulls. Those hulls require either a transom mount or a thru-hull installation.

Fourth, a Skimmer transducer with a built-in temp sensor will show only the temperature of the bilge, not the water surface temp.

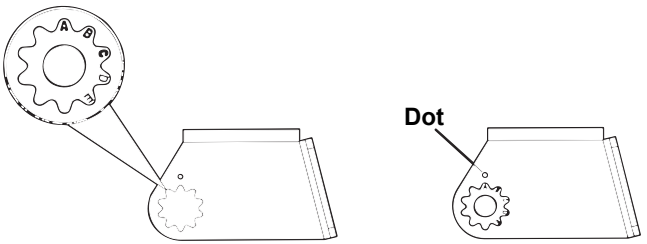
Follow the procedure listed in the shoot-thru-hull installation section at the end of this lesson to determine if you can satisfactorily shoot through the hull.

Transom Transducer Assembly and Mounting

The best way to install these transducers is to loosely assemble all of the parts first, place the transducer's bracket against the transom and see if you can move the transducer so that it's parallel with the ground.

1. Assembling the bracket. Press the two small plastic ratchets into the sides of the metal bracket as shown in the following illustration. Notice there are letters molded into each ratchet. Place each ratchet into the bracket with the letter "A" aligned with the dot stamped into

the metal bracket. This position sets the transducer's coarse angle adjustment for a 14° transom. Most outboard and stern-drive transoms have a 14° angle.

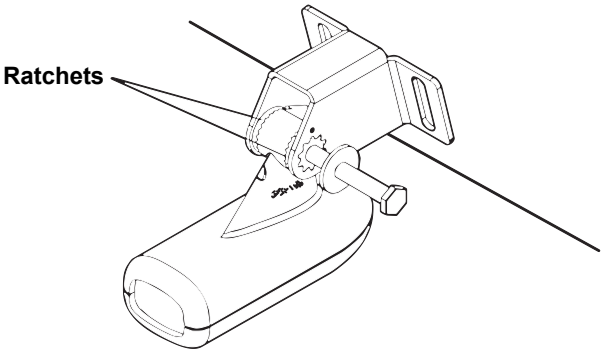


Align plastic ratchets in bracket.

2. Aligning the transducer on the transom. Slide the transducer between the two ratchets. Temporarily slide the bolt though the transducer assembly and hold it against the transom. Looking at the transducer from the side, check to see if it will adjust so that its face is parallel to the ground. If it does, then the "A" position is correct for your hull.

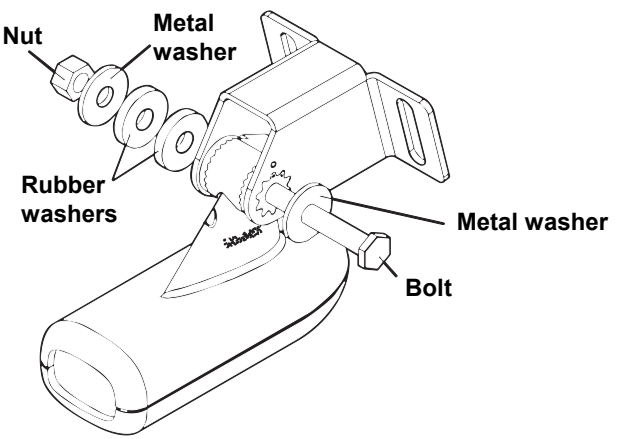
If the transducer's face isn't parallel with the ground, remove the transducer and ratchets from the bracket. Place the ratchets into the holes in the bracket with the letter "B" aligned with the dot stamped in the bracket.

Reassemble the transducer and bracket and place them against the transom. Again, check to see if you can move the transducer so it's parallel with the ground. If you can, then go to step 3. If it doesn't, repeat step 2, but use a different alignment letter until you can place the transducer on the transom correctly.



Insert bolt and check transducer position on transom.

3. Assembling the transducer. Once you determine the correct position for the ratchets, assemble the transducer as shown in the following figure. Don't tighten the lock nut at this time.

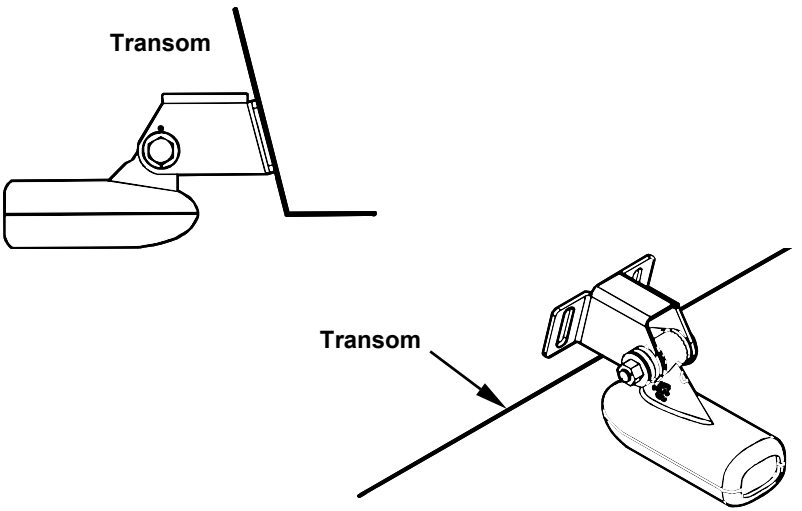


Assemble transducer and bracket.

4. Drilling mounting holes. Hold the transducer and bracket assembly against the transom. The transducer should be roughly parallel to the ground. The transducer's centerline should be in line with the bottom of the hull. Don't let the bracket extend below the hull!

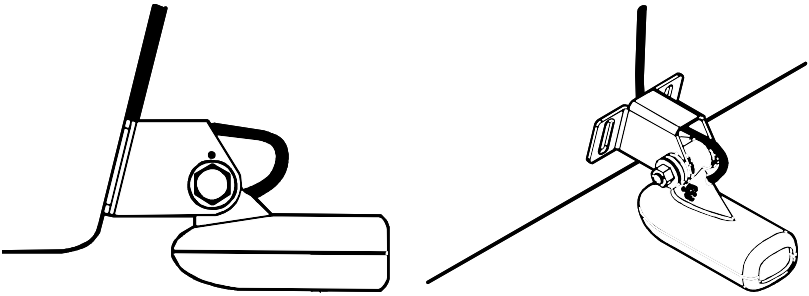
Mark the center of each slot for the mounting screw pilot holes. You will drill one hole in the center of each slot.

Drill the holes. Use the #29 bit (for the #10 screws).



Position transducer mount on transom and mark mounting holes. Side view shown at left and seen from above at right.

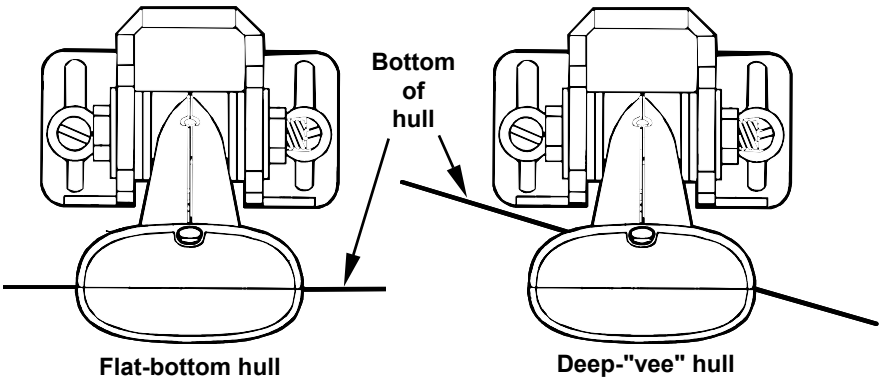
5. Attaching transducer to transom. Remove the transducer from the bracket and re-assemble it with the cable passing through the bracket over the bolt as shown in the following figures.



Route cable over bolt and through bracket.
Side view shown at left and seen from above at right.

Attach the transducer to the transom. Slide the transducer up or down until it's aligned properly with the bottom of the hull as shown in the preceding and following figures. Tighten the bracket's mounting screws, sealing them with the caulking compound.

Adjust the transducer so that it's parallel to the ground and tighten the nut until it touches the outer washer, then add 1/4 turn. *Don't over tighten the lock nut!* If you do, the transducer won't "kick-up" if it strikes an object in the water.



Align transducer centerline with hull bottom and attach to transom.

6. **Route the transducer cable through or over the transom to the sonar unit.** Make sure to leave some slack in the cable at the transducer. If possible, route the transducer cable away from other wiring on the boat. Electrical noise from the engine's wiring, bilge pumps, VHF radio wires and cables, and aerators can be picked up by the sonar. Use caution when routing the transducer cable around these wires.

WARNING:

Clamp the transducer cable to the transom close to the transducer. This can prevent the transducer from entering the boat if it is knocked off at high speed.

If you need to drill a hole in the transom to pass the connector through, the required hole size is 5/8". (If you intend to route an additional speed or temp sensor cable through the same hole, you will need a 1" (25.4 mm) drill bit instead.)

Caution:

If you drill a hole in the transom for the cable, make sure it is

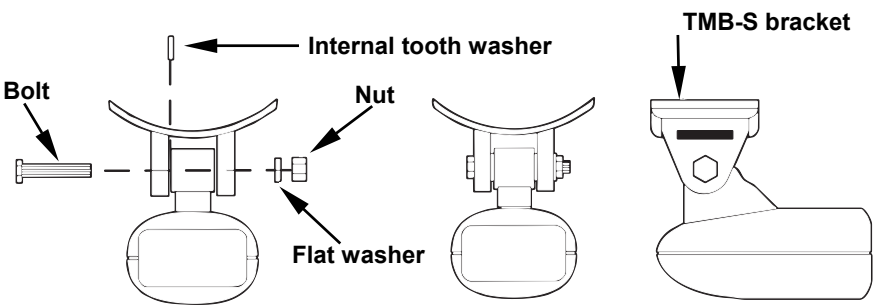
located above the waterline. After installation, be sure to seal the hole with the same marine grade above- or below-waterline sealant used for the mounting screws.

7. **Make a test run to determine the results.** If the bottom is lost at high speed, or if noise appears on the display, try sliding the transducer bracket down. This puts the transducer deeper into the water, hopefully below the turbulence causing the noise. Don't allow the transducer bracket to go below the bottom of the hull!

Trolling Motor Bracket Installation

(single-frequency only)

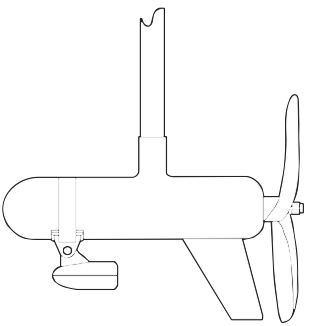
1. Attach the optional TMB-S bracket to the transducer as shown in the following figure, using the hardware supplied with the transducer. (Note: The internal tooth washer is supplied with the TMB-S.)



Attach motor mounting bracket to transducer.

2. Slide the adjustable strap supplied with the TMB-S through the slot in the transducer bracket and wrap it around the trolling motor. Position the transducer to aim straight down when the motor is in the water. Tighten the strap securely.

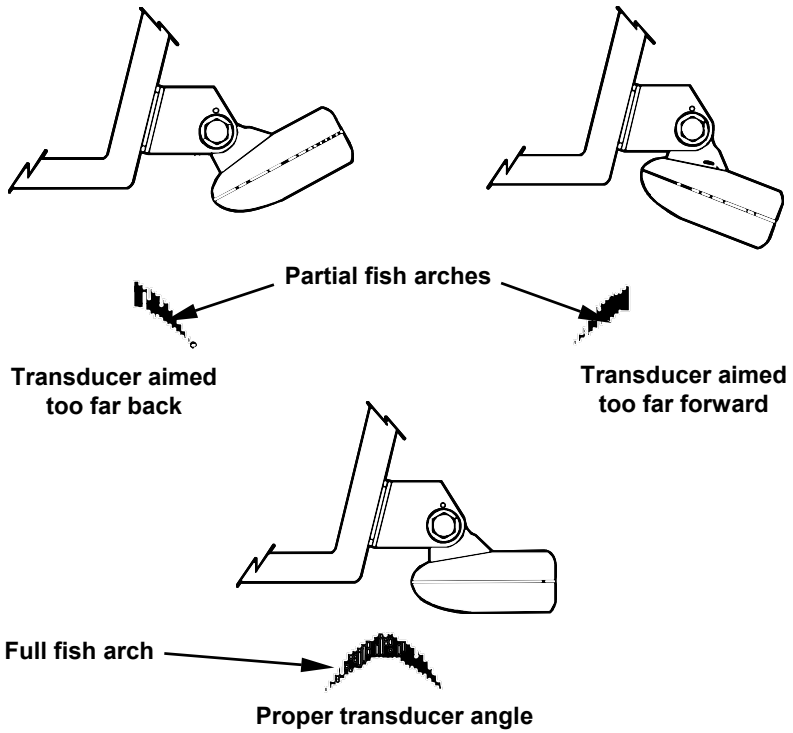
3. Route the transducer cable alongside the trolling motor shaft. Use plastic ties (not included) to attach the transducer cable to the trolling motor shaft. Make sure there is enough slack in the cable for the motor to turn freely. Route the cable to the sonar unit and the transducer is ready for use.



Transducer mounted on trolling motor, side view.

Transducer Orientation and Fish Arches

If you do not get good fish arches on your display, it could be because the transducer is not parallel with the ground when the boat is at rest in the water or at slow trolling speeds.



Transducer angles and their effects on fish arches.

If the arch slopes up – but not back down – then the front of the transducer is too high and needs to be lowered. If only the back half of the arch is printed, then the nose of the transducer is angled too far down and needs to be raised.

NOTE:

Periodically wash the transducer's face with soap and water to remove any oil film. Oil and dirt on the face will reduce the sensitivity or may even prevent operation.

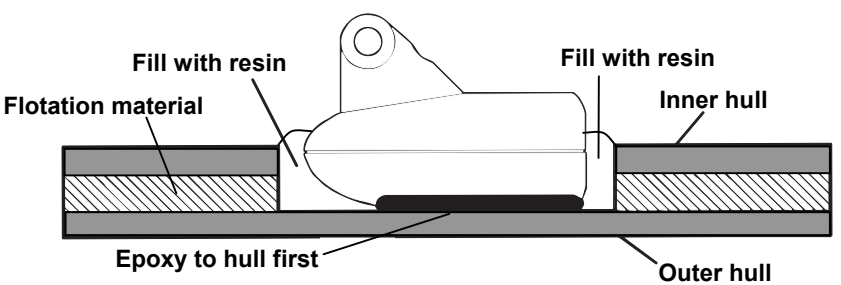
Shoot-Thru-Hull Preparation

Hulls With Flotation Materials

The transducer installation inside a fiberglass hull must be in an area that does not have air bubbles in the resin or separated fiberglass layers. The sonar signal must pass through solid fiberglass. A successful transducer installation can be made on hulls with flotation materials (such as plywood, balsa wood or foam) between layers of fiberglass if the material is removed from the chosen area. See the figure below.

WARNING:

Do not remove any material from your inner hull unless you know the hull's composition. Careless grinding or cutting on your hull can result in damage that could sink your boat. Contact your boat dealer or manufacturer to confirm your hull specifications.

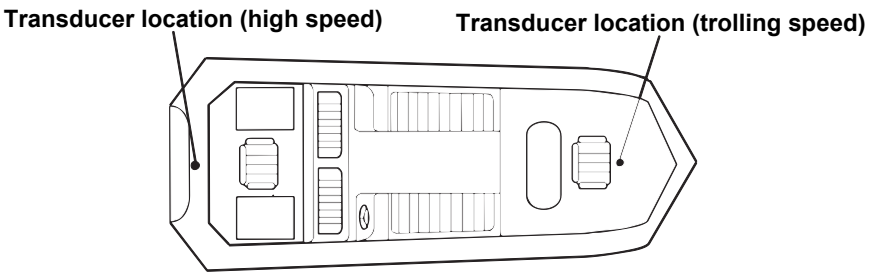


Epoxy the transducer to a solid portion of the hull.

For example, some (but not all) manufacturers use a layer of fiberglass, then a core of balsa wood, finishing with an outer layer of fiberglass. Removing the inner layer of fiberglass and the balsa wood core exposes the outer layer of fiberglass. The transducer can then be epoxied directly to the outer layer of fiberglass. After the epoxy cures for 24 hours, fill the remaining space with polyester resin. When the job is finished, the hull is watertight and structurally sound. Remember, the sonar signal must pass through *solid* fiberglass. Any air bubbles in the fiberglass or the epoxy will reduce or eliminate the sonar signals.

Testing Determines Best Location

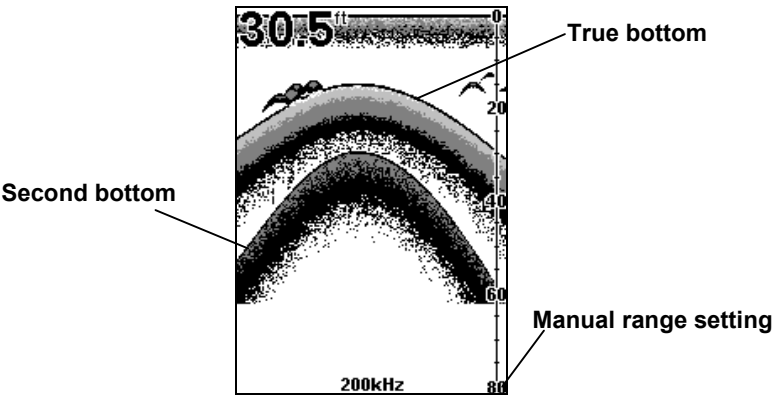
Ideally, the shoot-thru transducer should be installed as close to the transom as possible, close to the centerline. This will give you the best performance during high speed maneuvers.



Shoot-thru-hull transducer locations for high speed or trolling speed operation.

1. Anchor the boat in about 30 feet of water. Add a little water to the sump of the boat. Plug the transducer into the sonar unit, turn it on, then hold the transducer over the side of the boat in the water. Adjust the sensitivity and range controls until a second bottom echo is seen on the display. (You'll need to turn off Auto Sensitivity, Auto Depth Range and ASP™. Try a range setting that is two to three times the water depth. The harder

(more rocky) the bottom, the easier it will be to get a second bottom signal.) Don't touch the controls once they've been set.



Example of a second bottom signal. Unit is in 30 feet of water, with range set at 80 feet and sensitivity set at 87 percent.

2. Next, take the transducer out of the water and place it in the water in the sump of the boat, face down. (The transducer face is shown in the figure on the following page.) Notice how the signal strength decreases. The second bottom signal will probably disappear and the bottom signal intensity will likely decrease.

3. Now move the transducer around to find the best location with the strongest possible bottom signal. If you find a spot with an acceptable bottom signal, mark the location and move on to step 4.

If you can't get an acceptable bottom signal, try turning up the sensitivity by three or five keystrokes and then move the transducer around once more. If you find a spot that works, mark it and move on to step 4.

If you have to turn up sensitivity by more than five keystrokes to get a good signal, the transducer should be mounted on the outside of the

hull. This is especially true if you have to turn sensitivity all the way up to get a decent bottom signal.

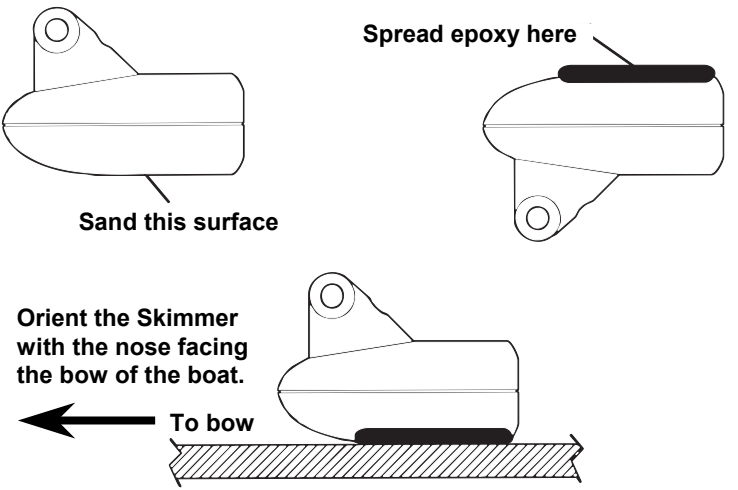
4. Most people can get good results by following steps 1 through 3, so this step is *optional*. If you want to make an extra effort to be absolutely sure that your selected location will work under all conditions, make a test run with the boat on plane and observe the bottom signal. You'll need to figure some way to prop the transducer into position while you make your test run. (A brick or two might be sufficient to hold it in place.)

5. When you're satisfied with a location, mark it and proceed with the installation.

Shoot-Thru-Hull Installation

If you are installing the transducer on a hull with floatation material sandwiched within the hull, refer to the text "Hulls with Flotation Materials" beginning on page 19.

1. Make sure the area is clean, dry and free of oil or grease, then sand both the inside surface of the hull and the face of the transducer with 100 grit sandpaper. The sanded hull area should be about 1-1/2 times the diameter of the transducer. The surface of the hull must be flat so the entire transducer face is in contact with the hull prior to bonding. After sanding, clean the hull and transducer with rubbing alcohol to remove any sanding debris.



Epoxy transducer to hull.

WARNING:

Use *only* the epoxy available from LEI. It has been formulated to work with these installation procedures. Other epoxy types may be too thin or may not cure to the right consistency for optimum transducer performance.

2. The epoxy consists of the epoxy itself and a hardener. Remove the two compounds from the package and place them on the paper plate.

Thoroughly stir the two compounds together until the mixture has a uniform color and consistency. Do not mix too fast or bubbles will form in the epoxy. After mixing, you have 20 minutes to complete the installation before the epoxy becomes unworkable.

Spread a thin layer of epoxy (about 1/16" or 1.5 mm thick) on the face of the transducer as shown in the previous figure. *Make sure there are no*

air pockets in the epoxy layer! Then, apply the remaining epoxy to the sanded area on the hull.

3. Press the transducer into the epoxy, twisting and turning it to force any air bubbles out from under the transducer face. Stop pressing when you bottom out on the hull. When you're finished, the face of the transducer should be parallel with the hull, with a minimum amount of epoxy between the hull and transducer.

4. Apply a weight, such as a brick, to hold the transducer in place while the epoxy cures. Be careful not to bump the transducer while the epoxy is wet. Leave the weight in place for a minimum of three hours. Allow the epoxy to cure for 24 hours before moving the boat.

5. After the epoxy has cured, route the cable to the sonar unit and it's ready to use.

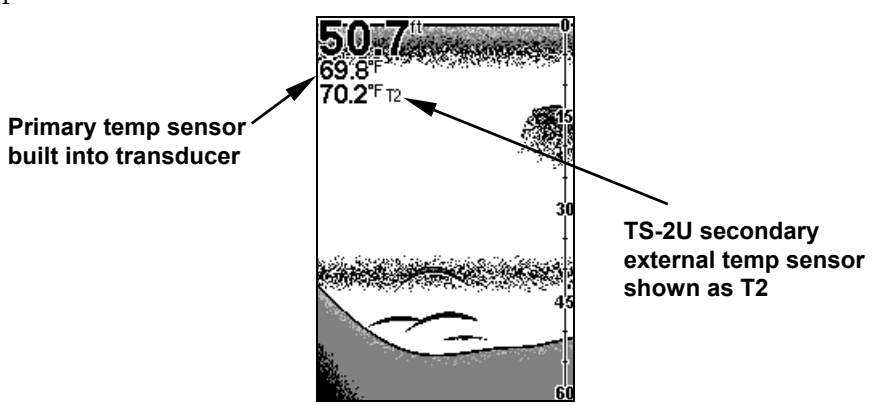
Speed/Temperature Sensors

The FishEasy 240 family can accept as many as two temperature sensors, which can be used to monitor the temperature of surface water, a live well or some other location. These units can accept an optional speed sensor for showing speed and distance traveled. However, you can only use one accessory at a time. If you would like to use a speed sensor and a temperature sensor at the same time, you will need a combination device.

NOTE:

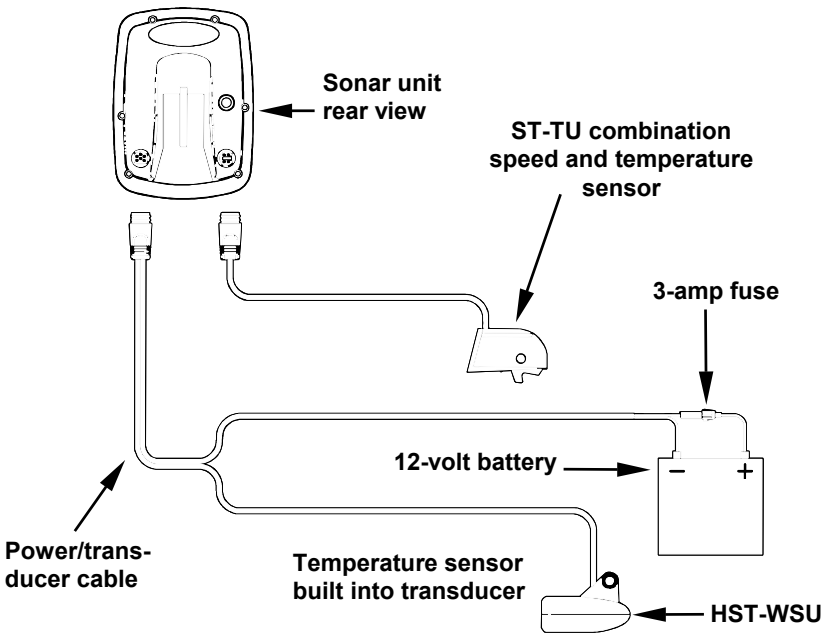
The FishEasy 240 and FishEasy 240 Portable are packed with transducers containing built-in temp sensors. If you want a speed sensor or an additional temp sensor, see the Accessory Ordering Information in the back of this manual.

If a *second* temp sensor is used, it must be the model TS-2U. This model has a fixed electronic "address" which designates it as the second of two temp sensors. Dual temperatures are displayed *only* on the Full Chart page. The Large Digital page will display only the *primary* temperature sensor.

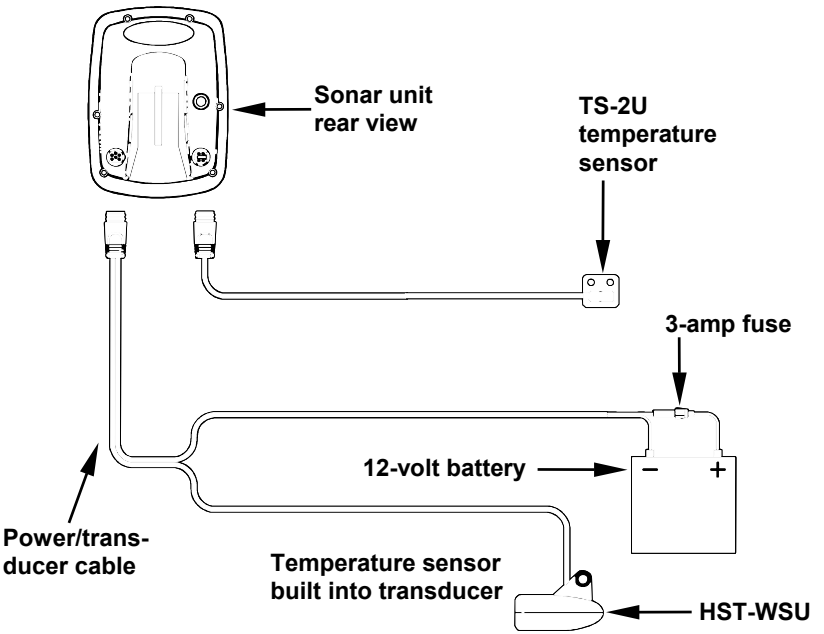


Full Chart page showing dual temperature display.

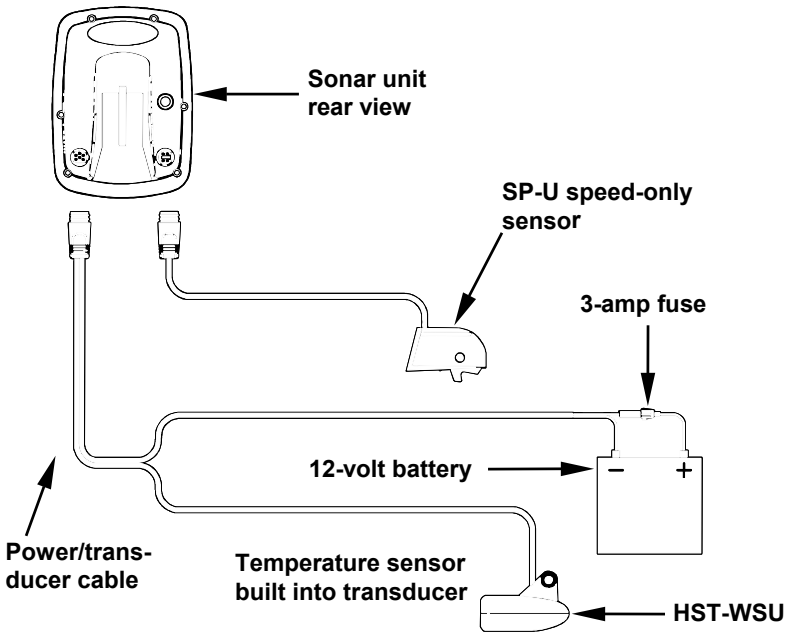
See the following charts for sample sensor combinations and cable connections.



Sonar unit with external combination speed and temperature sensor. Primary temp sensor is built into transducer.



Sonar unit with secondary external temperature sensor. Primary temp sensor is built into transducer.



Sonar unit with external speed sensor.
Temp sensor is built into transducer.

Speed Sensor Installation

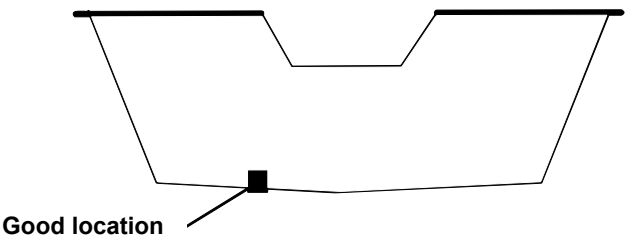
If you wish to purchase an optional sensor for your unit, refer to the accessory ordering information inside the back cover of this manual. The following instructions describe how to install the speed sensor.

Recommended tools for this job include: drill, 5/8"drill bit, 1/8" drill bit for pilot holes, screwdriver. Required supplies for this job include: four #8 stainless steel wood screws (3/4" long), *high quality, marine grade* above- or below-waterline caulking compound. (If you intend to route the sensor cable through the same hole as the transducer cable, you will need a 1" (25.4 mm) drill bit instead of the 5/8" drill bit.)

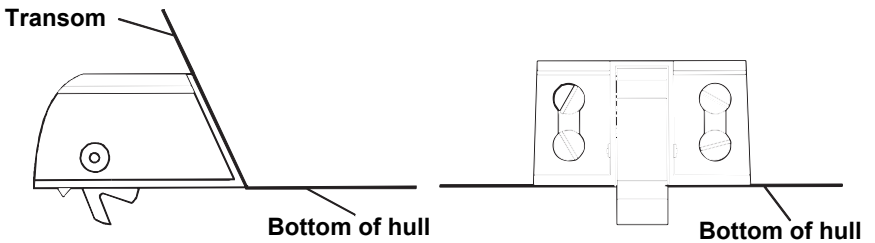
First find a location on the boat's transom where the water flow is smoothest. Don't mount the sensor behind strakes or ribs. These will disturb the water flow to the speed sensor. Make sure the sensor will remain in the water when the boat is on plane. Also make sure the location doesn't interfere with the boat's trailer. Typically, the sensor is mounted about one foot to the side of the transom's centerline.

Once you've determined the proper location for the unit, place the sensor on the transom. The bottom of the bracket should be flush with the hull's bottom. Using the sensor as a template, mark the hull for the screws' pilot holes. Drill four 1/8" holes, one in each end of the slots.

Mount the sensor to the hull using #8 stainless steel wood screws (not included). Use a *high quality, marine grade* above- or below-waterline caulking compound to seal the screws. Make sure the sensor is flush with the bottom of the hull and tighten the screws.



Stern view showing good location for mounting sensor on transom.



Speed sensor mounting configuration: side view (left) and rear view (right.)

If the base of the transom has a radius, fill the gap between the transom and the sensor with the caulking compound. This will help ensure a smooth water flow.

Route the sensor's cable through or over the transom to the sonar unit. If you need to drill a hole in the transom to pass the connector through, the required hole size is 5/8".

Caution:

If you drill a hole in the transom for the cable, make sure it is located above the waterline. After installation, be sure to seal the hole with the same marine grade above- or below-waterline sealant used for the screws.

The sensor is now ready for use. Connect the sensor to the accessory socket on the back of the unit. If you have any questions concerning the installation of the sensor, please contact your local boat dealer.

Power Connections
(permanent mount units only)

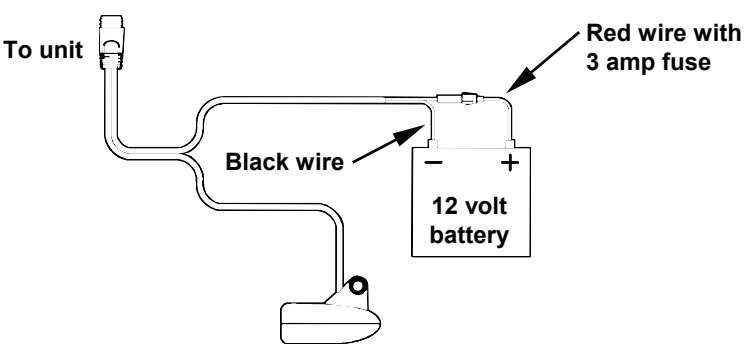
The unit works from a 12-volt battery system. You can attach the power cable to your boat's accessory or power buss (or directly to the battery). If you use an accessory buss but have problems with electrical

interference, attach the power cable directly to the battery. If the cable is not long enough, splice #18 gauge wire onto it.

CAUTION:

When using the unit in a saltwater environment, we strongly recommend that you shut off the power supply to the power cable when the unit is not in use. When the unit is turned off but still connected to a power supply, electrolysis can occur in the power cable plug. This may result in corrosion of the plug body along with the electrical contacts in the cable and the unit's power socket.

In saltwater environments we recommend you connect the power cable to the auxiliary power switch included in most boat designs. If that results in electrical interference, or if such a switch is not available, we recommend connecting direct to the battery and installing an inline switch. This will let you shut off power to the power cable when the unit is not in use. When you are not using the unit, you should always shut off power to the power cable, especially when the power cable is disconnected from the unit.



Power connections for the FishEasy 240 sonar unit (direct battery connection shown).

If possible, keep the power cable away from other boat wiring, especially the engine's wires. This will provide the best isolation from electrical noise. The power cable has two wires, red and black. Red is the positive lead, black is negative or ground. Make sure to attach the in-line fuse holder to the red lead *as close to the power source as possible.*

For example, if you have to extend the power cable to the battery or power buss, attach one end of the fuse holder directly to the battery or power buss. This will protect both the unit and the power cable in the event of a short. It uses a 3-amp fuse.

Caution:

Do not use this product without a 3-amp fuse wired into the power cable! Failure to use a 3-amp fuse will void your warranty.

This unit has reverse polarity protection. No damage will occur if the power wires are reversed. However, the unit will not work until the wires are attached correctly.

Mounting the Sonar Unit: In-Dash, Bracket or Portable

You can install the sonar unit on the top of a dash with the supplied bracket. This unit can be installed in a dash with the optional FM-6 in-dash adapter kit. The FM-6 kit includes an instruction sheet, part 988-0147-631, which contains a template for cutting out the mounting hole. This document can be downloaded free from the www.eaglesonar.com web site.

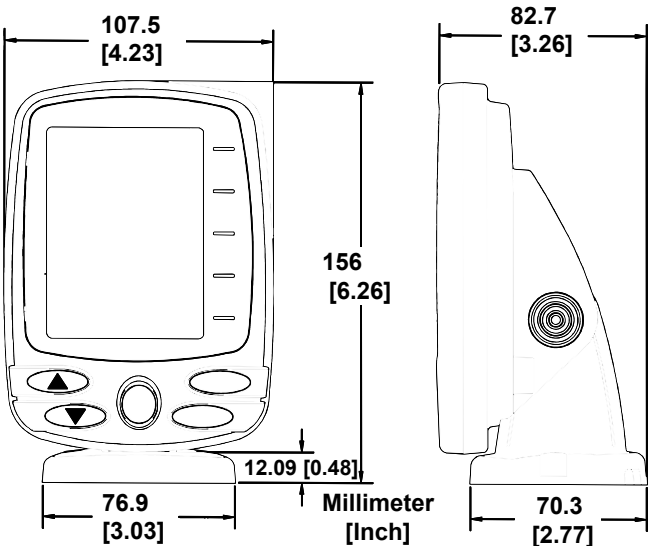
Bracket Installation

Recommended tools for this job include: drill, 1" (25.4 mm) drill bit, screwdriver. Required supplies for this job include: *high quality, marine grade* above- or below-waterline caulking compound, three #10 stainless steel screws. Screw length and type should be suitable for the material on which you intend to mount the bracket.

Mount the unit in any convenient location, provided there is clearance when it's tilted for the best viewing angle. You should also make sure there is enough room behind the unit to attach the power/transducer cable. (See the following drawings, which show the dimensions of a gimbal-mounted FishEasy 240 sonar unit.)

Holes in the bracket's base allow wood screw or through-bolt mounting. You may need to place a piece of plywood on the back side of thin panels to reinforce the panel and secure the mounting hardware.

Drill a 1" (25.4 mm) hole in the dash for the power/transducer and accessory cables. The best location for this hole is immediately under the gimbal bracket location. This way, the bracket can be installed so that it covers the hole, holds the cables in position and results in a neat installation. Some customers, however, prefer to mount the bracket to the side of the cable hole — it's a matter of personal preference.



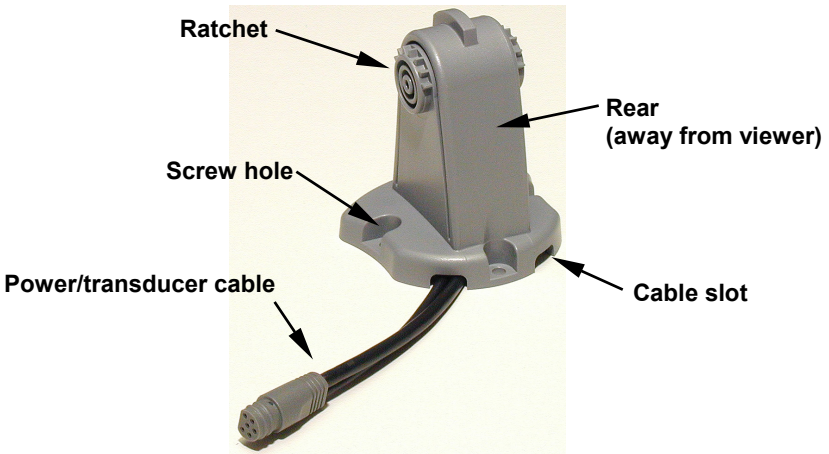
Front view (left) and side view (right) showing dimensions of the FishEasy 240 when mounted on quick release bracket.

After drilling the hole, pass the connectors *up* through the hole from under the dash. If you wish, you can fill in the hole around the cable with a good marine caulking compound. (Some marine dealers stock cable hole covers to conceal the opening.)

Using the Quick Release Mounting Bracket

These units use a quick release mounting bracket. When you run the cables through the bracket's cable slots, make sure you allow enough slack for tilting the unit and attaching the connector. (The snug fit of the push-on waterproof connector requires some force to attach.)

Align the bracket over the cable hole with the cable slots facing away from you and fit the cable through one of the slots. Fasten the bracket to the dash using the three screw holes.

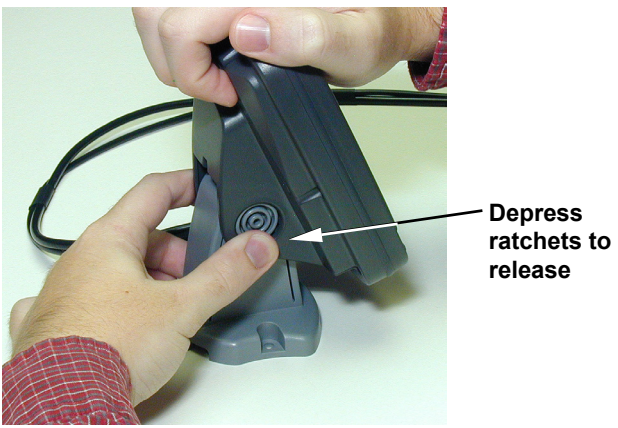


FishEasy 240 quick release mounting bracket. Slots in the base allow routing the cable from beneath the mount.

Attach the unit to the bracket by first connecting the power/transducer and accessory cables. Then, hold the sonar unit vertically and slide it onto the bracket from above. (The back of the unit should be touching the front of the bracket as you lower it into position.) As you push down, the unit will lock into place with a distinct click.

To adjust the viewing angle, pinch the ratchets with one hand, then tilt the unit with your other hand. Release the ratchets and the unit locks into the new position. To dismount the unit for storage, press the ratchets and lift the unit off the bracket.

Mount the sonar: slide the unit onto the bracket from above.



Adjust viewing angle: use one hand to press and release the spring-loaded ratchets while you move the unit with the other hand.

Portable Sonar Installation

Like many Eagle products, the FishEasy 240 sonar is capable of portable operation. It uses the optional PPP-12 portable power pack.

The power pack and portable transducers expand the uses for your sonar. You can use your FishEasy 240 sonar unit on your boat or take it to the dock, on a float tube, on an ice fishing trip or use it as a second sonar in a friend's boat.

The PPP-12 package includes the power pack, battery adapter and a portable transducer. The transducer can be stored inside the power pack. The PPP-12 requires eight AA alkaline batteries. Batteries are not included.

To use a portable power pack, you simply install the batteries and then attach the sonar unit to the power pack's bracket. Plug in the power/transducer cable and you're ready to fish.

The PPP-12 has a quick-release mounting bracket built into the case.

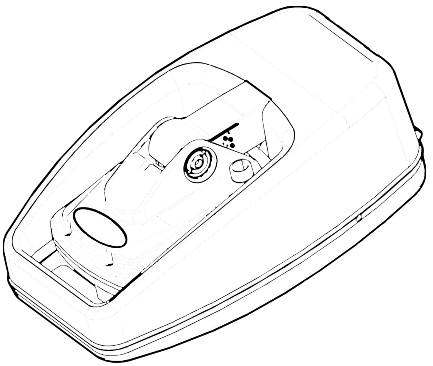
Installing the Batteries

Release the latch on the front of the power pack case. Open the compartment and install eight AA batteries into the adapter. For the longest life, we recommend you use alkaline batteries.

NOTE:

When the unit is not in use, we recommend you unplug the power connector to reduce the possibility of corrosion or battery drain. When you store the unit, always remove the batteries because dead batteries can leak and corrode the contacts.

After installing the batteries, close the case and plug the sonar unit's power cable into the socket on the power pack case.



PPP-12 Portable Power Pack with FishEasy 240 stowed for transport.

Turn the sonar unit on. If it doesn't work, make sure the battery terminals are making good contact against the battery contacts. Also check the wiring connections on the battery adapter. The red wire on the power cable should be attached to the red wire on the battery adapter and the power cable's black wire should be connected to the black wire on the battery adapter.

If it still doesn't work, check the battery voltage. Most of the complaints we receive about portable units result from stale batteries. Make sure the ones you buy are fresh.

In cold weather the efficiency of dry cell batteries drops with the temperature. We find it a good idea to have the sonar unit good and warm along with the batteries before we leave home.

If the batteries do lose a charge, you can sometimes restore them by placing them in a warm room or car interior. A better way is to replace them with batteries that have been kept warm.

WARNING:

Never heat the batteries over an open flame or direct hot air onto them. A fire or explosion could result.

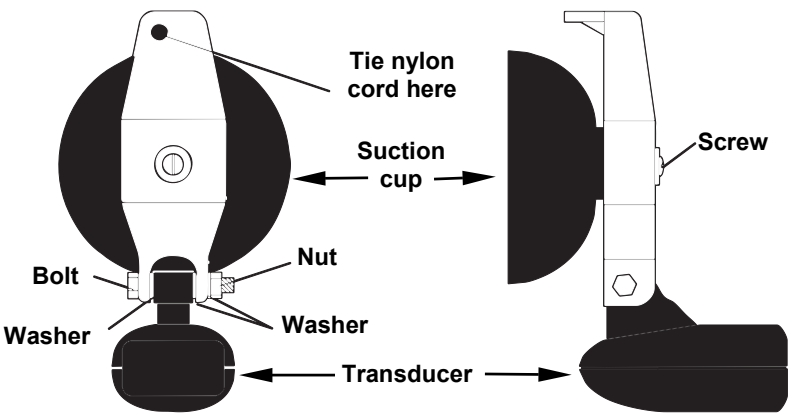
Portable Transducer Assembly

Recommended tools for installation include a slotted screw driver and two adjustable wrenches.

Assemble the transducer and bracket as shown in the following figure. Attach the transducer to the bracket with the supplied hardware.

Make sure there is one washer on each side of the transducer, inside the bracket. Slide the other washer over the end of the bolt and thread the nut onto it.

Screw the suction cup onto the bracket using the supplied screw and flat washer. Tie the nylon cord through the hole in the top of the bracket. When using this transducer, tie the other end of the nylon cord to the boat. This will help prevent the loss of the transducer if it comes off the boat.

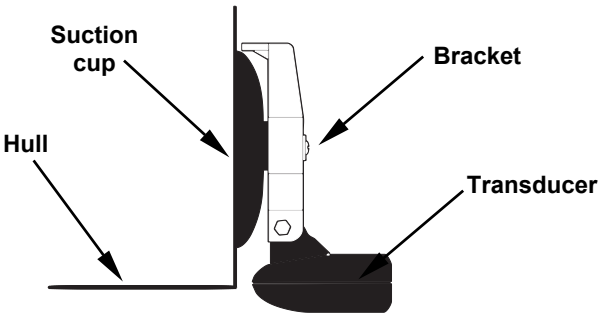


Portable transducer assembly: rear view (left) and side view (right.)

Clean the chosen area of the hull before attaching the suction cup. Locate the transducer on the hull as shown in the following figure. Don't

allow the bracket to extend below the hull, because water pressure against it can cause the suction cup to come off at speed.

Moisten the cup, then press it onto the hull as firmly as possible. Tie the nylon cord to the boat and route the transducer cable to the sonar unit. Your portable sonar is now ready for use.



Portable transducer installed on boat transom.

NOTE:

For optimum operation, the portable transducer should be adjusted so that it is parallel to the ground. For more information on this, see the earlier segment on Transducer Orientation and Fish Arches.

For more detailed instructions on installing the FishEasy 240 Portable unit, please refer to the PPP-12 Porta Power Pack instruction sheet packed with your unit. These instructions are also available for download from the Eagle web site (www.eaglesonar.com).

Operation

Keyboard Basics

The unit sounds a tone when you press any key. This tells you the unit has accepted a command. Numbers in the figure correspond to key explanations below:

Eagle FishEasy 240 Sonar, showing screen and keyboard.

1. PWR/CLEAR (power and clear)

This key appears in the manual text simply as **PWR**. Press this key to turn the unit on and off. It also clears menu selections and the menus from the screen.

NOTE:

You must hold the **PWR** key down for a countdown of five in order to turn the unit off.

2. MENU UP (menu up)

3. MENU DOWN (menu down)

These keys appears in the manual text as **MENU UP** or **MENU DOWN**. Most of the time, the instructions require you to press either menu key, so the text simply uses the word **MENU**. Usually, when we say **MENU**, you can simply press the **MENU UP** key for consistency.

This sonar unit has many features that are accessed with the menu keys. The **MENU UP** key moves up or forward through the menus, the **MENU DOWN** key moves down or backward. To see the first menu, simply press either **MENU** key. To see the other menus, press a **MENU** key repeatedly to cycle through the menu list.

4. UP and DOWN ARROWS

These keys appear in the manual text as **DOWN ARROW** or **UP ARROW**. Use these keys to adjust virtually every feature and function on the sonar unit.

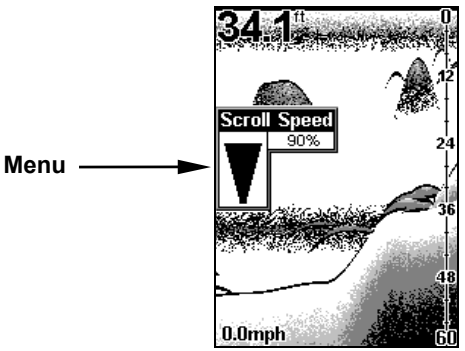
Memory

This unit has permanent memory that saves all user settings, even when power is removed. It does not require, nor does it use an internal backup battery, so you never have to worry about replacement batteries.

Menus

This unit uses menus to guide you through the various functions and features. Menu names and settings appear in the manual text as small capital letters like **SENSITIVITY**, which represents the Sensitivity menu. The menu keys access these features, allowing you to customize the unit to your particular needs and water conditions. All you have to do to leave one menu and enter another is press **MENU** repeatedly. If you ever get lost in the menus, simply press the **PWR** key. This clears the menus from the screen.

Menus change depending on the mode the unit is in. Messages may appear in menu boxes or new menus can appear, depending on previous selections.

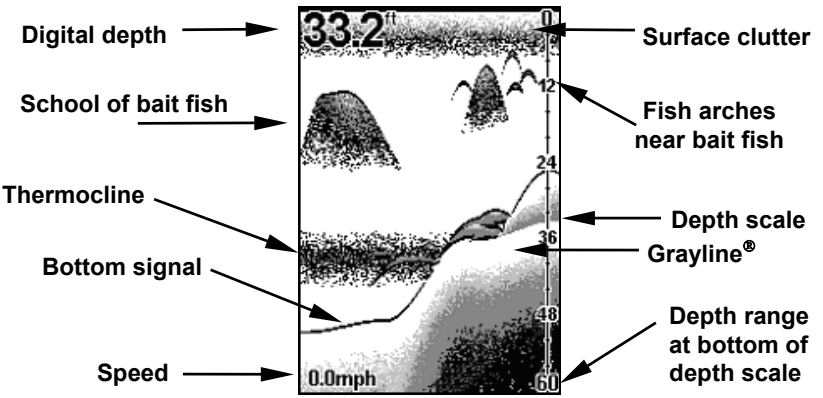


This screen shows a typical menu, the Scroll Speed menu.

Display – Opening Screen

The lights flash for about 10 seconds when the unit is turned on. The backlight menu first appears on the screen. To turn the lights on, press **UP ARROW**. If you don't press a key, the menu will disappear after a few seconds. If you don't want to wait, press **PWR** to clear the menus from the screen.

When the sonar unit is first turned on and the backlight menu disappears, the display screen shows the Full Chart Page, or mode. The Fish I.D.™ feature is off. The depth range shows on the depth scale on the right side of the screen. On the screen below, the range is from 0 to 60 feet and the bottom depth is 33.2 feet, shown by the digital sonar.



Opening screen, Full Chart page, or mode.

Chart Scroll (stopping and starting)

In normal operation, the sonar chart will scroll from right to left across the screen. You can stop the chart from scrolling across the screen. This is useful when you want to "freeze" the picture to study it more closely. To stop or start the chart, press **MENU** until the **CHART** menu appears. Use the arrow keys to select or highlight the desired setting, then press **PWR** to clear the menu.

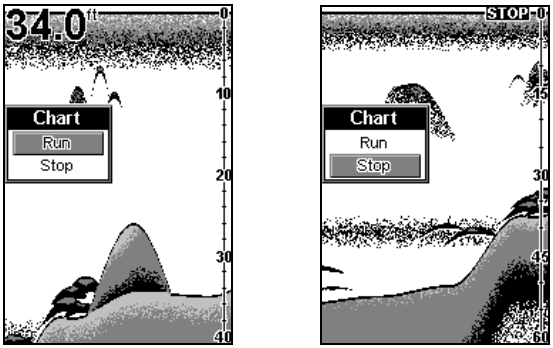
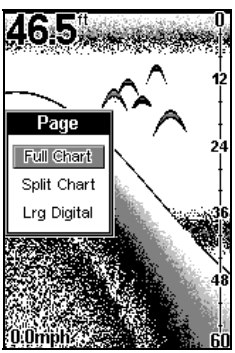


Chart menu. Chart is running or scrolling normally at left. Chart is stopped at right, and "Stopped" warning message appears.

Screen Display Modes or Pages

The FishEasy 240 has three screen display modes, or "Pages:" Full Chart page, Split Chart page and Large Digital page.



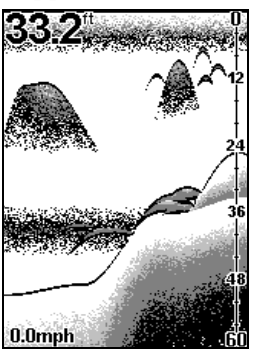
The FishEasy 240 Page menu lets you select among the display modes, or pages.

To switch from one page to another page, press **MENU** until the **PAGE** menu appears. Press **UP ARROW** or **DOWN ARROW** to select the desired

page. (The screen changes as you move through the menu.) When the page you want is selected, press **PWR** to clear the menu.

Full Chart

This shows all echoes scrolling across the full screen. This is the default page. The bottom signal scrolls across the screen from right to left. Depth scales on the right side of the screen make it easy to determine the depth of fish, structure, and other targets. The line at the top of the screen represents the surface. The bottom depth (as determined by the digital sonar) shows in the upper left corner.

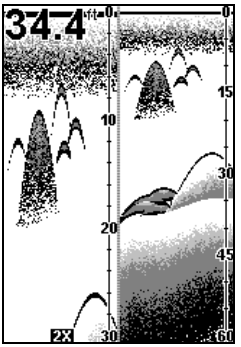


Full Chart page, showing digital depth at top and speed at bottom.

If an optional speed or temperature sensor is connected, digital displays for speed and/or temperature will also be shown.

Split Chart

This shows the normal view of the underwater world from the surface to the bottom on the right side of the screen. The left side shows an enlarged or "zoomed" version of the echoes appearing on the right side. A zoom message, such as "2X," appears at the bottom of the "zoomed" side of the screen.



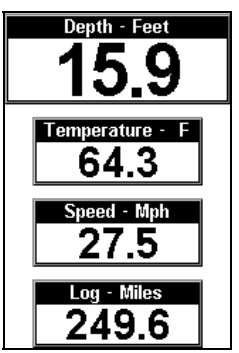
Split Chart page with normal view at right; zoomed view at left.

Lrg Digital (Large Digital)

The Large Digital page shows all information in big numbers. The digital depth display is at the top of this screen, followed by the temperature, speed, and distance readings.

NOTE:

Temperature, speed, and distance require a temperature or speed sensor. These may be optional equipment, depending on the sonar model you purchased.

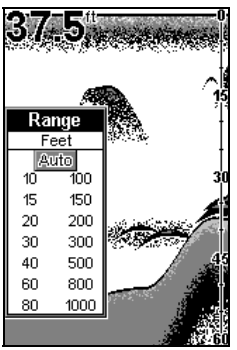


Large Digital page.

Range

When turned on for the first time, the unit automatically adjusts the depth range according to water conditions. It always keeps the bottom displayed in the lower portion of the screen. You can over-ride the automatic range control and manually select a range.

To do this, press **MENU** until the **RANGE** menu appears. Use the arrow keys to select the desired range. When you're finished, press **PWR** to clear the menu from the display.

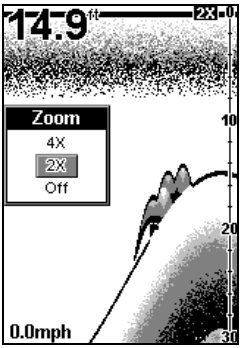


Range Select menu.

This unit has the following ranges:
10, 15, 20, 30, 40, 60, 80, 100, 150, 200, 300, 500, 800 and 1,000 feet.

Zoom

The zoom feature enlarges all echoes on the screen. The 2X zoom doubles the size of the echoes on the display; the 4X zoom quadruples the echo size.



Zoom screen, showing Zoom menu and the 2X zoom indicator at the top right of the screen.

To zoom the display, first press the **MENU** key until the **ZOOM** menu appears. Use the arrow keys to select either 2X or 4X zoom, then press **PWR** to clear the menu.

When the display is in Zoom mode, the screen will show a zoom indicator box at the top right corner of the screen. This is a reminder that the display is zoomed, and it tells what level of zoom is in effect.

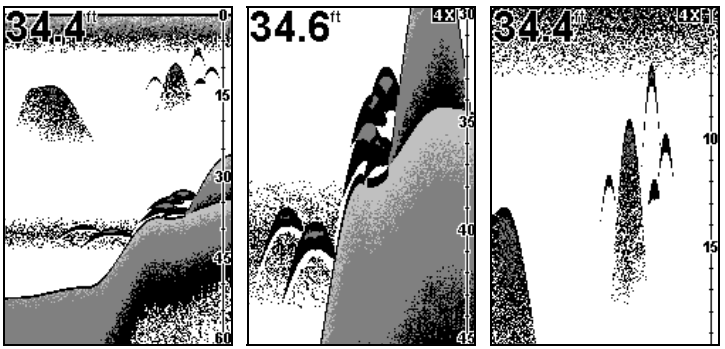
To turn the zoom feature off, press the **MENU** key until the **ZOOM** menu appears. Use the arrow keys to select **OFF**, then press **PWR** to clear the menu.

Important Tip:

Your unit has the handy ability to quickly zoom in on any portion of the water column with just the touch of an arrow key. The Zoom Pan feature lets you rapidly move the zoomed area up and down to different depths. By "pointing" your zoom at different portions of the chart as it scrolls, you can get a good, close-up look at structure or cover below you.

To use Zoom Pan, switch to a manual depth Range setting (see page 33) and turn on 2X or 4X Zoom. Then, simply press the **UP ARROW** or **DOWN ARROW** to pan up and down the water column.

Fig. 1 Fig. 2 Fig. 3



In 34 feet of water, with the Range set manually at 60 feet, the unit shows the entire water column in Fig. 1. To get a closer look, turn around and follow your wake to troll over the structure again. With the unit in 4X zoom, press the down arrow key to look at the six fish along the ledge, then press the up arrow to pan up the water column to see four game fish threatening a school of forage fish.

NOTE:

Using the Zoom command while in *auto* Range mode will always enlarge the echoes near the bottom, because auto Range always keeps the bottom displayed in the lower portion of the screen.

When you Zoom in *manual* Range mode, echoes are enlarged near the middle of the displayed range. For example, with a manual depth Range of 100 feet, your screen shows the water column from zero at the top of the screen to 50 feet in the middle to 100 feet at the bottom of the screen. Select 2X Zoom and the screen will show the water column from zero to 50 feet, with 25 feet shown in the middle of the screen. Select 4X Zoom and the screen shows the water column from 13 feet to about 39 feet, with 25 feet still in the middle of the screen.

Sensitivity

Sensitivity controls the unit's ability to pick up echoes. If you want to see more detail, try increasing the sensitivity, a little at a time. There are situations when too much clutter appears on the screen. Decreasing the sensitivity can reduce the clutter and show the strongest fish echoes, if fish are present. As you change the sensitivity setting, you can see the difference on the chart as it scrolls.

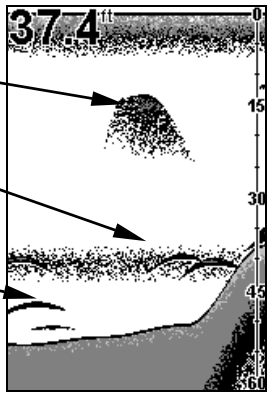


Fig. 1

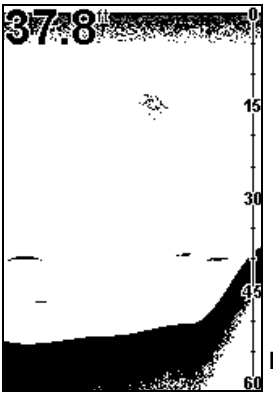


Fig. 2

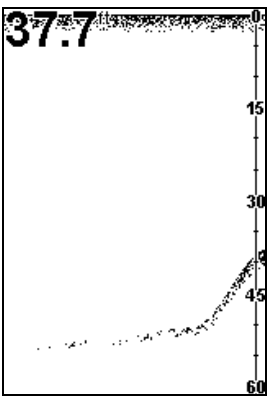


Fig. 3

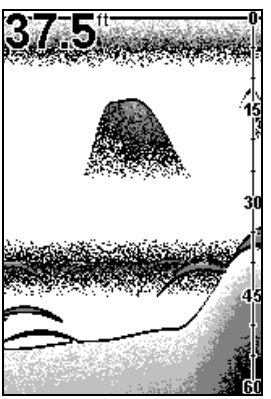


Fig. 4

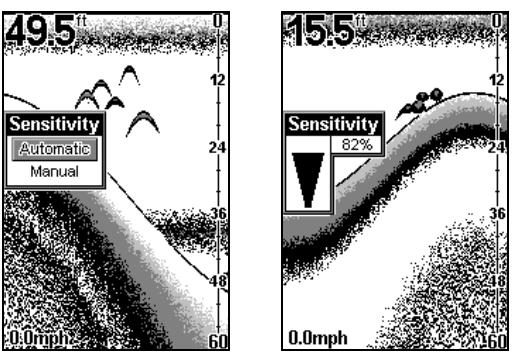
These figures show results of different sensitivity levels on the same location. Fig. 1: Sensitivity at 87 percent, determined by Auto Sensitivity. Typical of full auto mode. Fig. 2: Sensitivity set at 50 percent. Fig. 3: Sensitivity set at 20 percent. Fig. 4: Sensitivity set at 100 percent.

You can change the sensitivity level whether you are in Auto Sensitivity mode or Manual Sensitivity mode. The adjustment method works the same in both modes, but it gives you slightly different results.

Adjusting sensitivity in Auto Sensitivity Mode is similar to manually adjusting a car's speed with the accelerator pedal while cruise control is on. You can tell the car to run faster, but when you let off the gas the cruise control *automatically* keeps you from running slower than the minimum speed setting. In your unit, auto mode will let you increase sensitivity to 100 percent, but the unit will *limit* your *minimum* setting. This prevents you from turning sensitivity down too low to allow automatic bottom tracking. When you change the setting with auto turned on, the unit will continue to track the bottom and make minor adjustments to the sensitivity level, with a bias toward the setting you selected.

Adjusting sensitivity in Manual Sensitivity Mode is similar to driving a car without cruise control — you have *complete* manual control of the car's speed. In your unit, manual mode allows you to set sensitivity at 100 percent (maximum) or zero percent (minimum.) Depending on water and bottom conditions, the bottom signal may completely disappear from the screen when you reduce sensitivity to about 20 percent or less!

Try adjusting sensitivity in both auto and manual modes to see how they work.



Sensitivity menu screens. Left, automatic or manual menu. Right, Sensitivity Adjustment menu.

To adjust sensitivity:

Press **MENU** until the **SENSITIVITY ADJUSTMENT** menu appears. Press **UP ARROW** to increase the sensitivity, **DOWN ARROW** to decrease it. When it's set at the desired level, press **PWR** to clear the menu.

The sensitivity percentage in use shows in this menu. As you change the setting, echoes scrolling onto the screen will show the effects of the change. If you reach the maximum or minimum sensitivity level, a tone sounds alerting you to the limits.

NOTE:

If you want to change the sensitivity in Manual Mode, first turn off Auto Sensitivity: press **MENU** until the **SENSITIVITY AUTOMATIC/MANUAL** menu appears. Press **DOWN ARROW** to select **MANUAL**, then press **PWR** to clear the menu. To adjust the sensitivity, follow the same steps used for adjusting sensitivity in auto mode above.

Grayline®

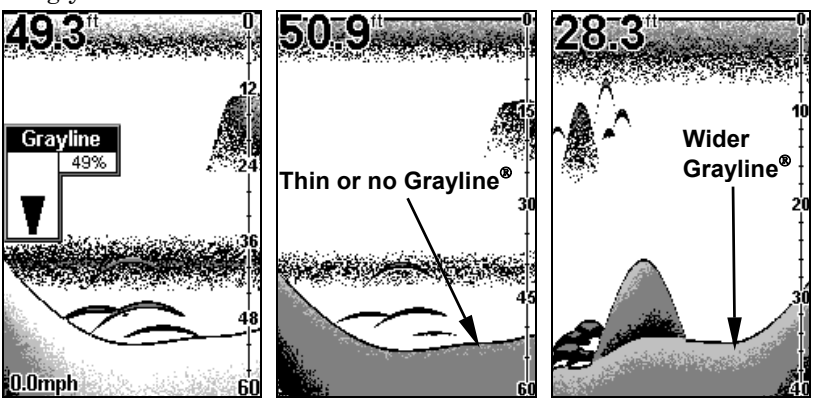
Grayline® lets you distinguish between strong and weak echoes. It "paints" gray on targets that are stronger than a preset value. This allows you to tell the difference between a hard and soft bottom. For example, a soft, muddy or weedy bottom returns a weaker signal which is shown with a narrow or no gray line. A hard bottom returns a strong signal which causes a wide gray line.

If you have two signals of equal size, one with gray and the other without, then the target with gray is the stronger signal. This helps distinguish weeds from trees on the bottom, or fish from structure.

Grayline is adjustable. The factory default for this unit is 69 percent. Since Grayline shows the difference between strong and weak signals, adjusting the sensitivity may also require a different Grayline level. The level chosen by the sonar unit at power on is usually adequate for most conditions. Experiment with your unit to find the Grayline setting that's best for you.

To change the Grayline level, press **MENU** until the **GRAYLINE** menu appears.

Press **UP ARROW** to increase the level or press **DOWN ARROW** to decrease it. The percentage of Grayline in use shows in this menu. Echoes scrolling onto the screen will also show the effects of the Grayline change. If you reach the maximum or minimum level, a tone sounds alerting you to the limits. Press **PWR** to clear the menu.



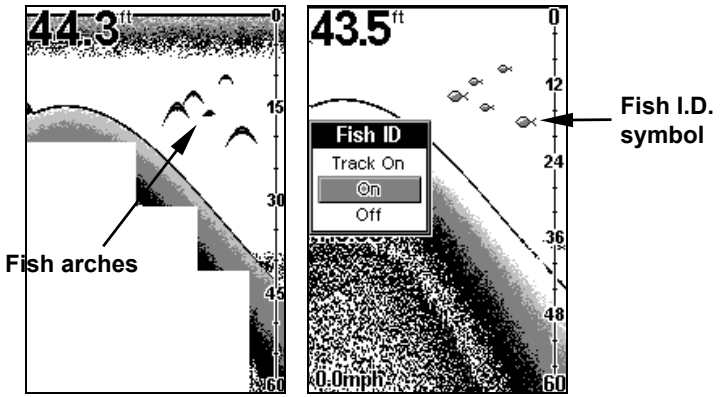
At left, Grayline menu screen. Center, little Grayline indicates a soft bottom, probably sand or mud. At right, the wider Grayline indicates a harder, rocky bottom.

Fish I.D.™

The Fish I.D.™ feature identifies targets that meet certain conditions as fish. The microcomputer analyses all echoes and eliminates surface clutter, thermoclines and other signals that are undesirable. In most instances, remaining targets are fish.

The Fish I.D. feature displays symbols on the screen in place of the actual fish echoes. There are three symbol sizes: small, medium, and large. These show the relative size between targets. In other words, it

displays a small fish symbol when it thinks a target is a small fish, a medium fish symbol on a larger target and so forth.



At left, underwater scene in normal fish arch mode. Right, Fish I.D. menu with the feature turned on.

Fish I.D. is an easier way for a sonar novice to recognize a fishy signal return when he sees it. However, locating fish by symbol *only* has some limitations.

Your sonar unit's microcomputer is sophisticated, but it can be fooled. It can't distinguish between fish and other suspended objects such as trotlines, turtles, submerged floats, air bubbles, etc. Individual tree limbs extending outward from a group of limbs are the hardest objects for the Fish I.D. feature to distinguish from fish.

To see what's under your boat in maximum detail, we recommend you turn off Fish I.D. and begin learning to interpret fish arches.

You may see Fish I.D. symbols on the screen when actually, there are no fish. The reverse is also true — Fish I.D. can actually miss fish that are present.

Does that mean Fish I.D. is broken? No — the feature is simply interpreting sonar returns in a specific way to help take some of the work

out of reading the screen. Remember: Fish I.D. is one of the many tools we provide so you can analyze your sonar returns for maximum fish finding information. This and other features can help you successfully "see" beneath the boat under varied water and fishing conditions. So, practice with the unit in both the Fish I.D. mode and without to become more familiar with the feature. The default for Fish I.D. is off.

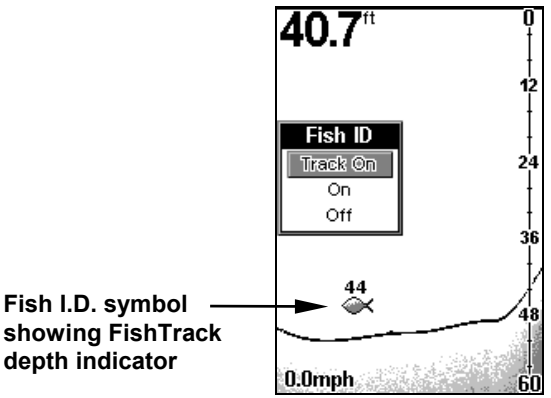
Fish I.D. is most handy when you're in another part of the boat or performing some task that prevents you from watching the sonar screen. Then, you can turn on Fish I.D. and the audible fish alarm. When that lunker swims under your boat, you'll hear it!

Fish I.D. can also be useful when you want to screen out some of the sonar detail gathered by your unit. For example, it can help cut through the clutter of suspended bubbles caused by wave action or boat wakes.

To turn Fish I.D. on, press **MENU** until the **FISH ID** menu appears. Press **UP ARROW** to select **ON**, then press **PWR**. To turn it back off, repeat the above steps, but press **DOWN ARROW** to select **OFF**.

Fishtrack™

The FishTrack™ feature shows the depth of a fish symbol when it appears on the display. To turn it on, press **MENU** until the **FISH ID** menu appears. Press **UP ARROW** to select **TRACK ON**, then press **PWR**. To turn it off, repeat the above steps, but press **DOWN ARROW** to select **OFF**. (If you want to turn off FishTrack depths but leave Fish I.D. on, press **DOWN ARROW** to select **ON**, then press **PWR**.) Remember, Fish I.D. must be on in order to use the FishTrack feature.

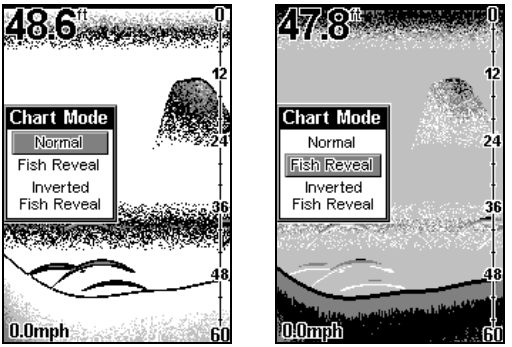


Fish ID menu and symbol with FishTrack on. The fish is 44 feet deep.

FishReveal™

When displaying actual sonar returns, the FishReveal™ feature helps show fish targets hidden by surface clutter, thermoclines, weed beds and other cover with 10 levels of gray tones.

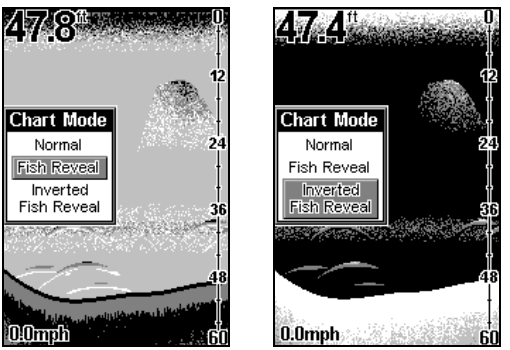
Normal operation (with FishReveal turned off) shows the weakest echoes as black and the strongest in light gray. Since all weak echoes are black, fish arches show boldly against the white background. The drawback is that all weak echoes — such as thermoclines — are also accentuated. This can make it hard to distinguish fish signals inside thermoclines or other cover.



At left FishReveal menu screen. The feature is off and screen is in normal mode. Right, Fish Reveal is on, in standard mode.

There are two FishReveal modes: standard and inverted. In standard mode, the weakest echoes are white and the strongest echoes are black. Echoes in between vary in gray in proportion to their signal strength.

In Inverted FishReveal mode, the weakest echoes are black and the strongest echoes are white. Again, echoes in between vary in gray in proportion to their signal strength. In all modes, the Grayline control determines the range for black to white.



At left, standard FishReveal mode. Right, Inverted Fish Reveal mode.

To turn FishReveal on, press **MENU DOWN** until **CHART SETUP** appears, then press **UP ARROW**. Press **MENU DOWN** until **CHART MODE** appears. Press **DOWN ARROW** to select the desired FishReveal mode. Press **PWR** to clear the menu. To return to normal operation, repeat the above steps, but select **NORMAL** before clearing the menu.

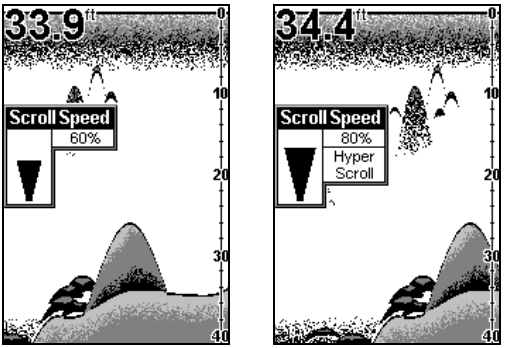
Chart Scroll Speed and HyperScroll™

The rate that echoes scroll across the screen is called the chart scroll speed. The default for this unit is 60 percent; we recommend that you leave the scroll speed set there for virtually all fishing conditions.

However, you might consider experimenting with chart speed when you are stationary or drifting very slowly. You may sometimes achieve better images as you slow down the chart speed to match how fast you are moving across the bottom.

Switching to a scroll speed faster than 60 percent can be helpful when running at high speed. Any setting greater than 60 switches the unit to HyperScroll™. This feature scrolls the echoes at an extremely high rate of speed, giving you the maximum screen update.

If you are at anchor, ice fishing or fishing from a dock, experiment with a chart speed of 20 percent. If you are drifting slowly, try a chart speed of 40 percent. When you are stationary and a fish swims through the sonar signal cone, the image appears on the screen as a long line instead of a fish arch. Reducing the chart speed may result in a shorter line that more closely resembles a regular fish return.



At right, Scroll Speed menu at default 60 percent setting. At left, Scroll Speed menu, with unit set to HyperScroll mode.

If you are running fast, try a HyperScroll setting of 80 to 100 percent. When using HyperScroll, you may also need to manually decrease the sensitivity for best performance. Depending on water conditions, HyperScroll may cause a second bottom echo and large amounts of clutter to appear on the screen. If this occurs, just decrease the sensitivity to a level that eliminates the clutter. When you turn HyperScroll off, you can return to your original sensitivity level.

Adjust scroll speed by pressing **MENU** until **SCROLL SPEED** appears. Press **UP ARROW** to increase it and press **DOWN ARROW** to decrease it. Press **PWR** to clear the menu.

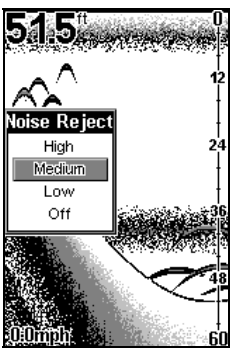
To return to the original setting, repeat the above steps, but use the arrow keys to set the speed at 60 percent before clearing the menu.

Noise Reject and ASP™ (Advanced Signal Processing)

The ASP™ (Advanced Signal Processing) feature is a noise rejection system built into the sonar unit. It constantly evaluates the effects of boat speed, water conditions and electrical interference and automatically gives you the best display possible under most conditions.

ASP is an effective tool in combating noise. In sonar terms, noise is any undesired signal. It is caused by electrical and mechanical sources such as bilge pumps, engine ignition systems and wiring, air bubbles passing over the face of the transducer, even vibration from the engine. In all cases, noise can produce unwanted marks on the display.

The ASP noise rejection feature is especially useful because it typically lets you operate the boat at all speeds without adjusting the sensitivity or other controls.



Noise Reject menu.

The ASP feature has four settings — Off, Low, Medium and High. When first turned on, noise rejection is set on low. If you have high noise levels, try using the medium or high ASP setting. However, if you are having trouble with noise, we suggest that you take steps to find the interference source and fix it, rather than continually using the unit with the high ASP setting.

There are times when you may want to turn ASP off. This allows you to view all incoming echoes before they are processed by the ASP feature.

To change the ASP setting, press **MENU DOWN** until **NOISE REJECT** appears. Use the up and down arrow keys to select the desired setting, then press **PWR** to clear the menu.

Alarms

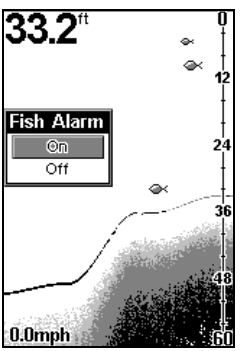
The sonar unit has two different types of alarms, fish and depth.

Fish Alarm

The Fish Alarm sounds a tone when a fish symbol appears on the screen. The default setting is on, but the Fish I.D. feature must be turned on for fish alarms to work.

To turn Fish I.D. on, press **MENU** until the **FISH ID** menu appears. Press **UP ARROW** to select **ON**, then press **PWR**.

To turn off the fish alarm without turning off fish symbols, press **MENU DOWN** until **FISH ALARM** appears. Press **DOWN ARROW** to select **OFF**, then press **PWR** to clear the menu. Repeat the above steps to turn the alarm back on, but press **UP ARROW** to select **ON** before clearing the menu.



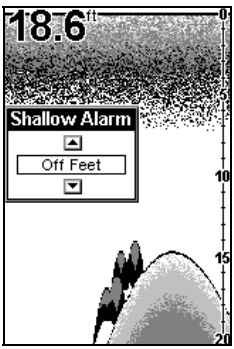
Fish Alarm menu.

Depth Alarms

The depth alarms are triggered only by the bottom signal. No other echoes will activate these alarms. The depth alarms consist of a shallow and a deep alarm. The shallow alarm sounds an alarm tone when the bottom goes shallower than the alarm's setting. The deep alarm sounds a tone when the bottom goes deeper than its setting. Both alarms adjust the same way, although through different menus.

Shallow Alarm

To set the shallow alarm depth, press **MENU DOWN** repeatedly until **SHALLOW ALARM** appears.



Shallow Alarm menu.

Press **UP ARROW** to increase the shallow alarm's depth setting or press **DOWN ARROW** to decrease it. The number in the shallow alarm's menu box shows the current shallow alarm setting. When the number reaches the desired setting, press **PWR** to clear the menu. When the bottom depth goes shallower than the alarm's setting, an alarm tone sounds and a message box appears on the screen.

Press **UP ARROW** to silence the alarm. This turns the alarm sound off until the shallow alarm is triggered again.

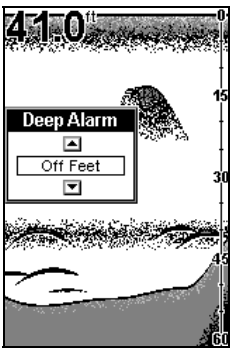
To turn the alarm off, press **MENU DOWN** repeatedly until **SHALLOW ALARM** appears. Press **DOWN ARROW** until the words **OFF FEET** appear, then press **PWR** to clear the menu.

Deep Alarm

To set the deep alarm depth, press **MENU DOWN** repeatedly until **DEEP ALARM** appears.

Press **UP ARROW** to increase the deep alarm's depth setting or press **DOWN ARROW** to decrease it. The number in the deep alarm's menu box

shows the current deep alarm setting. When the number reaches the desired setting, press **PWR** to clear the menu. When the bottom depth goes deeper than the alarm's setting, an alarm tone sounds and a message box appears on the screen.



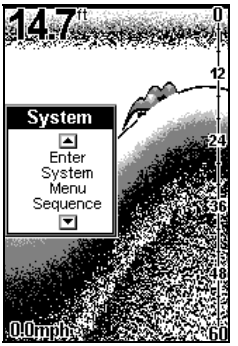
Deep Alarm menu.

Press **UP ARROW** to silence the alarm. This turns the alarm sound off until the deep alarm is triggered again.

To turn the alarm off, press **MENU DOWN** repeatedly until **DEEP ALARM** appears. Press **DOWN ARROW** until the words **OFF FEET** appear, then press **PWR** to clear the menu.

System Setup

To customize the display, press **MENU DOWN** until the **SYSTEM SETUP** menu appears, then press **UP ARROW**. The display contrast, units of measure, temperature, and system information screens are all under this menu. The Contrast menu appears first. Press the **MENU UP** or **MENU DOWN** keys to cycle through the menus. When you're finished, press the **PWR** key to clear the menus.

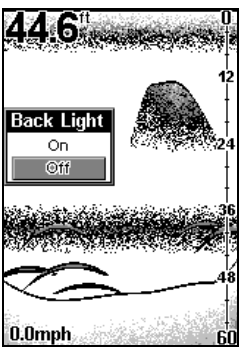


System Setup menu.

Display Adjustments

Backlights

The display is backlit for night use. To turn the backlight on or off, press **MENU** repeatedly until the **BACK LIGHT** menu appears. Press **UP ARROW** to turn the light on or the **DOWN ARROW** to turn it off.

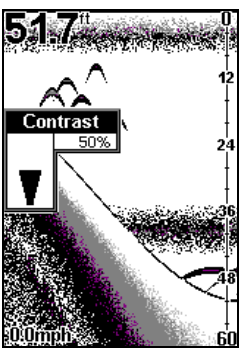


Backlight menu.

Display Contrast

The unit's display contrast is adjustable to suit different lighting conditions. This will help you see the screen from different angles or at various times of the day. The default setting is 50 percent.

To adjust the contrast, press **MENU DOWN** until the **SYSTEM** menu appears, press **UP ARROW**, and the **CONTRAST** menu appears. To decrease screen contrast, press the **DOWN ARROW** key. Press the **UP ARROW** key to increase screen contrast. The bar graph in the Contrast menu box shows a graph of the contrast. The screen will also show the effects of the change. If you reach the maximum or minimum level, a tone sounds alerting you to the limits. Press the **PWR** key to clear the menu.

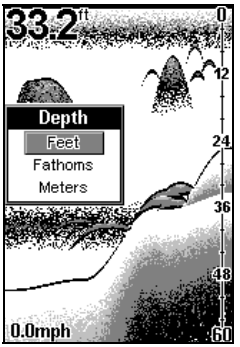


Display Contrast menu.

Depth Units of Measure

This unit can show the depth in feet, fathoms or meters.

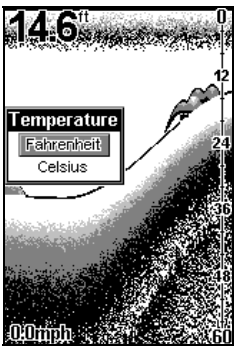
To change the depth units of measure, press **MENU DOWN** until the **SYSTEM** menu appears, press **UP ARROW**, then press **MENU** until the **DEPTH** menu appears. Use the arrow keys to select the desired unit of measure, then press the **PWR** key to clear the menu.



Depth menu controls the unit of measure used to show depth.

Temperature Units of Measure

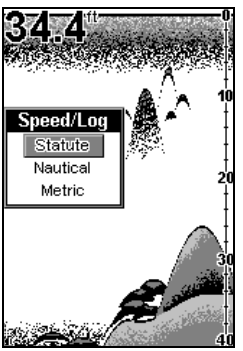
This unit can show the temperature (if a temperature sensor is attached) in degrees Fahrenheit or Celsius. To change the unit of measure, press **MENU DOWN** until the **SYSTEM** menu appears. Press **UP ARROW**, then press **MENU** until the **TEMPERATURE** menu appears. Use the arrow keys to select the measurement unit, then press **PWR** to clear the menu.



Temperature unit of measure menu.

Speed and Distance Log Units of Measure

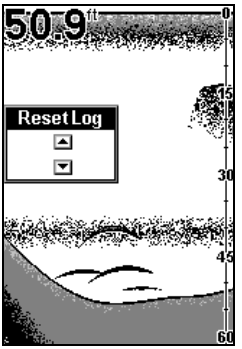
The speed and distance log can be displayed in statute miles (MPH), Nautical miles (knots), or Metric (kilometers per hour) if a speed sensor is attached. To change the unit of measure, press **MENU DOWN** until the **SYSTEM** menu appears. Press **UP ARROW**, then press **MENU** until the **SPEED/LOG** menu appears. Use the arrow keys to select the desired measurement unit, then press **PWR** to clear the menu.



Speed menu.

Reset Distance Log

You can reset the distance log to zero with this command. Press **MENU DOWN** until **SYSTEM** appears, then press **UP ARROW**. Press **MENU** until the **RESET LOG** menu appears. Press **UP ARROW** and the log returns to zero. Press **PWR** to clear the menu.

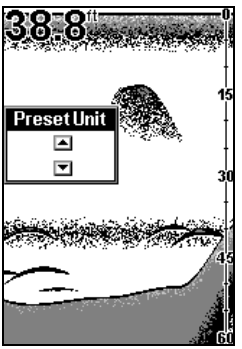


Reset Log menu.

Preset Unit (reset all options)

This command is used to reset all features, options and settings to their original factory defaults. This is useful when you have changed several settings and want to return the unit to basic automatic operation.

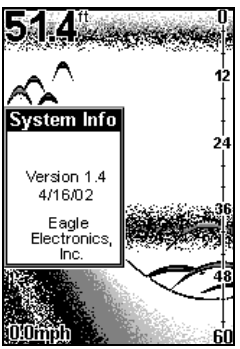
Press **MENU DOWN** until **SYSTEM** appears, then press **UP ARROW**. Press **MENU DOWN** until the **PRESET UNIT** menu appears. Press **UP ARROW** and the unit will turn itself off and reset all options. Turn the unit back on by pressing **PWR**.



Preset Unit menu resets all options to the factory settings.

System Info

To show the operating software system information, press **MENU DOWN** until the **SYSTEM** menu appears, then press **UP ARROW**. Press **MENU DOWN** until the **SYSTEM INFO** screen appears. Press **PWR** to clear the screen.

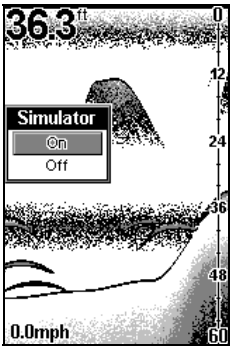


System Info screen.

Simulator

This unit has a built-in simulator that shows a simulated bottom signal with fish signals. This lets you practice with the unit as if you were on the water; all features and functions of the unit are usable. A message appears occasionally to remind you that the simulator is on.

To use the simulator, press **DOWN MENU** repeatedly until the **SYSTEM** menu appears, then press **UP ARROW**. Press **DOWN MENU** until the **SIMULATOR** menu appears. Now press **UP ARROW** to turn it on, and press **PWR** to clear the menu. Repeat the above steps to turn it off, or you can simply turn the unit off and back on again.



Simulator menu.

NOTE:

If you turn on your unit before attaching a transducer, it may enter a demo mode. The words "demo mode" flash on the bottom of the screen and a sonar chart plays much like the simulator. Unlike the simulator, the demo mode is for demonstration only, and will automatically stop as soon as you turn on the unit with a transducer attached. The simulator will continue to function normally.

Chart Setup

The Chart Setup menu lets you further customize the display. The size of the digital numbers for the depth, temperature, speed and distance log can be customized from this menu. The depth scales shown on the right side of the screen can be modified, and the Fish Reveal modes can be turned on or off.

To enter the Chart Setup menu sequence, press **MENU DOWN** until the **CHART SETUP** menu appears. Press **UP ARROW** and then you can use the menu keys to cycle through the chart setup menus.

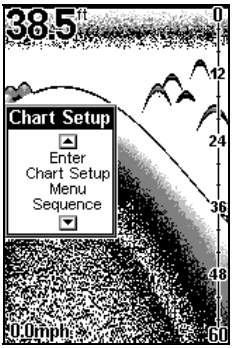


Chart Setup menu.

Limit Search

The Limit Search command helps you maintain maximum chart detail when you are moving fast in deep water (about 200 feet). When turned on, Limit Search prevents the digital sonar from over-riding the sonar chart's depth range setting.

Limit Search does this by preventing the digital sonar from slowing down the ping speed as it automatically searches for and tracks the bottom. The default setting is off, and this should fit most freshwater fishing situations.

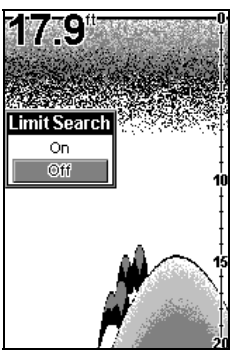
High boat speed and slow ping speed (caused by the deeper bottom) can reduce the screen refresh rate. This in turn can reduce the amount of detail seen on the sonar chart. Try this command only if you are in deep water, traveling at high speed, and notice a reduction in detail on the sonar chart. When Limit Search is turned on, the digital sonar will limit its search for the bottom to the depth range you have set for the sonar chart.

NOTE:

Turning Limit Search on can cause the digital sonar to lose the bottom in some situations. The digital depth will flash if that occurs.

The sonar chart must be in manual depth range mode to use the Limit Search command. To switch from auto depth range to manual, press **MENU** until the **RANGE** menu appears. Use the arrow keys to select the desired range. When you're finished, press **PWR** to clear the menu from the display.

Next, press **MENU DOWN** until the **CHART SETUP** menu appears, then press **UP ARROW** to enter the list of Chart Setup commands, where the **LIMIT SEARCH** menu appears. Press **UP ARROW** to turn it on and press **PWR** to clear the menu.



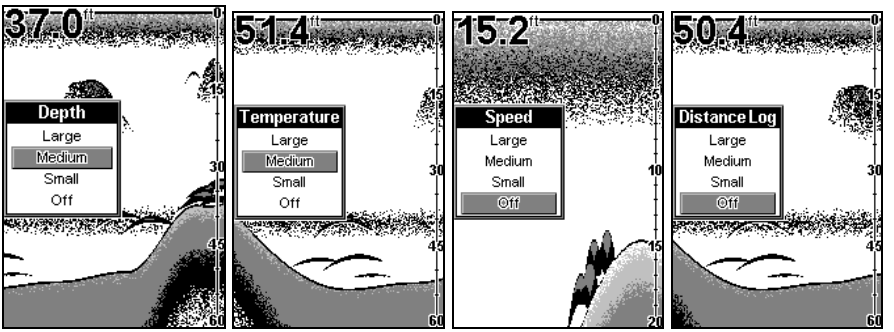
Limit Search menu.

To turn Limit Search off, repeat the above steps but press the **DOWN ARROW** to select "Off." Also remember to switch the depth range setting back to automatic. This will restore the digital sonar's ability to automatically track the bottom.

Digital Data Size for Depth, Temperature, Speed, and Distance Log

The size of the digital numbers for the depth, temperature, speed and distance log can individually be changed to any one of three sizes. The digital displays can also be turned off or on.

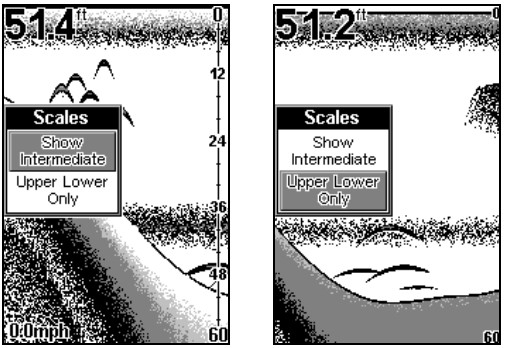
To change any of these options, press **MENU DOWN** until **CHART SETUP** appears, then press **UP ARROW**. Use the **MENU** keys to cycle through the list and display the desired menu, then use the **ARROW** keys to select the desired number size or turn the numbers off. Press the **PWR** key to clear the menus.



Menus for changing digital number size.

Scales

The depth scale between the upper and lower limit on the right side of the screen can be turned on or off. The default is on.



Scales menu, with scale on (left) and off (right). With the scale off, only the upper and lower limits (zero and 60 in this case) are displayed

To turn the scale off, press **MENU DOWN** until **CHART SETUP** appears, then press **UP ARROW**. Press **MENU DOWN** until **SCALES** appears, then press **DOWN ARROW** to select **UPPER LOWER ONLY**. Press the **PWR** key to clear the menus.

To turn scale on, press **MENU DOWN** until **CHART SETUP** appears, then press **UP ARROW**. Press **MENU DOWN** until **SCALES** appears, then press **UP ARROW** to select **SHOW INTERMEDIATE**. Press the **PWR** key to clear the menus.

Troubleshooting

If your unit is not working, or if you need technical help, please use the following troubleshooting section before contacting the factory customer service department. It may save you the trouble of returning your unit for repair. For contact information, refer to the last page, just inside the back cover of this manual.

Unit won't turn on:

1. Check the power cable's connection at the unit. Also check the wiring.

2. Make certain the power cable is wired properly. The red wire connects to the positive battery terminal, black to negative or ground.

3. Check the fuse.

4. Measure the battery voltage at the unit's power connector. It should be at least 11 volts. If it isn't, the wiring to the unit is defective, the battery terminals or wiring on the terminals are corroded, or the battery needs charging.

Unit operates only in demo mode:

1. The transducer has not yet been connected or has been disconnected. To leave demo mode, make sure the transducer is securely connected before turning the unit on.

Unit freezes, locks up, or operates erratically:

1. Electrical noise from the boat's motor, trolling motor, or an accessory may be interfering with the sonar unit. Rerouting the power and transducer cables away from other electrical wiring on the boat may help. Route the sonar unit's power cable directly to the battery instead of through a fuse block or ignition switch

2. Inspect the transducer cable for breaks, cuts, or pinched wires.

3. Check both the transducer and power connectors. Make certain both are securely plugged in to the unit.

Weak bottom echo, digital readings erratic, or no fish signals:

1. Make sure the transducer is pointing straight down. Clean the face of the transducer. Oil, dirt and fuel can cause a film to form on the transducer, reducing its effectiveness. If the transducer is mounted inside the hull, be sure it is shooting through only one layer of fiberglass and that it is securely bonded to the hull. When attaching a transducer to the inside of a hull, ONLY use the epoxy available from LEI (order information is inside the back cover). Do NOT use RTV silicone rubber adhesive or any other type of epoxy. The LEI epoxy is specially formulated so that it will cure properly for shoot-through applications.

2. Electrical noise from the boat's motor can interfere with the sonar. This causes the sonar to automatically increase its Discrimination or noise rejection feature. This can cause the unit to eliminate weaker signals such as fish or even structure from the display.

3. The water may be deeper than the sonar's ability to find the bottom. If the sonar can't find the bottom signal while it's in the automatic mode, the digital sonar display will flash continuously. It may change the range to limits far greater than the water you are in. If this happens, place the unit in the manual mode, then change the range to a realistic one, (for example, 0-100 feet) and increase the sensitivity. As you move into shallower water, a bottom signal should appear.

4. Check the battery voltage. If the voltage drops, the unit's transmitter power also drops, reducing its ability to find the bottom or targets.

Bottom echo disappears at high speeds or erratic digital reading or weak bottom echo while boat is moving

1. The transducer may be in turbulent water. It must be mounted in a smooth flow of water in order for the sonar to work at all boat speeds. Air bubbles in the water disrupt the sonar signals, interfering with its ability to find the bottom or other targets. The technical term for this is cavitation.

2. Electrical noise from the boat's motor can interfere with the sonar. This causes the sonar to automatically increase its Discrimination or noise rejection feature. This can cause the unit to eliminate weaker signals such as fish or even structure from the display. Try using resistor spark plugs or routing the sonar unit's power and transducer cables away from other electrical wiring on the boat.

No fish arches when the Fish I.D. feature is off:

1. Make certain the transducer is pointing straight down. This is the most common problem if a partial arch is displayed.

2. The sensitivity may not be high enough. In order for the unit to display a fish arch, it has to be able to receive the fish's echo from the time it enters the cone until it leaves. If the sensitivity is not high enough, the unit shows the fish only when it is in the center of the cone.

3. Use the Zoom feature. It is much easier to display fish arches when zoomed in on a small range of water than a large one. For example, you will have much better luck seeing fish arches with a 30 to 60 foot range than a 0 to 60 foot range. This enlarges the targets, allowing the display to show much more detail.

4. The boat must be moving at a slow trolling speed to see fish arches. If the boat is motionless, fish stay in the cone, showing on the screen as straight horizontal lines.

Noise

A major cause of sonar problems is electrical noise. This usually appears on the sonar's display as random patterns of dots or lines. In severe cases, it can completely cover the screen with black dots, or cause the unit to operate erratically, or not at all.

To eliminate or minimize the effects of electrical noise, first try to determine the cause. With the boat at rest in the water, the first thing you should do is turn all electrical equipment on the boat off. Make sure the engine is also off. Turn your sonar on, then turn off Noise Reject [also known as the ASP feature (Advanced Signal Processing)].

Sensitivity should be set at 90-95 percent. There should be a steady bottom signal on the display. Now turn on each piece of electrical equipment on the boat and view the effect on the sonar's display. For example, turn on the bilge pump and view the sonar display for noise. If no noise is present, turn the pump off, then turn on the VHF radio and transmit. Keep doing this until all electrical equipment has been turned on, their effect on the sonar display noted, then turned off.

If you find noise interference from an electrical instrument, trolling motor, pump, or radio, try to isolate the problem. You can usually reroute the sonar unit's power cable and transducer cable away from the wiring that is causing the interference. VHF radio antenna cables radiate noise when transmitting, so be certain to keep the sonar's wires away from it. You may need to route the sonar unit's power cable directly to the battery to isolate it from other wiring on the boat.

If no noise displays on the sonar unit from electrical equipment, then make certain everything except the sonar unit is turned off, then start the engine. Increase the RPM with the gearshift in neutral. If noise appears on the display, the problem could be one of three things; spark plugs, alternator, or tachometer wiring. Try using resistor spark plugs, alternator filters, or routing the sonar unit's power cable away from engine wiring. Again, routing the power cable directly to the battery helps eliminate noise problems. Make certain to use the in-line fuse supplied with the unit when wiring the power cable to the battery.

When no noise appears on the sonar unit after all of the above tests, then the noise source is probably cavitation. Many novices or persons with limited experience make hasty sonar installations which function perfectly in shallow water, or when the boat is at rest. In nearly all cases, the cause of the malfunction will be the location and/or angle of the transducer. The face of the transducer must be placed in a location that has a smooth flow of water at all boat speeds. Read your transducer owner's manual for the best mounting position.

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EAGLE ELECTRONICS
FULL ONE-YEAR WARRANTY

"We," "our," or "us" refers to EAGLE ELECTRONICS, a division of LEI, the manufacturer of this product. "You" or "your" refers to the first person who purchases this product as a consumer item for personal, family, or household use.

We warrant this product against defects or malfunctions in materials and workmanship, and against failure to conform to this product's written specifications, all for one (1) year from the date of original purchase by you. WE MAKE NO OTHER EXPRESS WARRANTY OR REPRESENTATION OF ANY KIND WHATSOEVER CONCERNING THIS PRODUCT. Your remedies under this warranty will be available so long as you can show in a reasonable manner that any defect or malfunction in materials or workmanship, or any non-conformity with the product's written specifications, occurred within one year from the date of your original purchase, which must be substantiated by a dated sales receipt or sales slip. Any such defect, malfunction, or non-conformity which occurs within one year from your original purchase date will either be repaired without charge or be replaced with a new product identical or reasonably equivalent to this product, at our option, within a reasonable time after our receipt of the product. If such defect, malfunction, or non-conformity remains after a reasonable number of attempts to repair by us, you may elect to obtain without charge a replacement of the product or a refund for the product. THIS REPAIR, OR REPLACEMENT OR REFUND (AS JUST DESCRIBED) IS THE EXCLUSIVE REMEDY AVAILABLE TO YOU AGAINST US FOR ANY DEFECT, MALFUNCTION, OR NON-CONFORMITY CONCERNING THE PRODUCT OR FOR ANY LOSS OR DAMAGE RESULTING FROM ANY OTHER CAUSE WHATSOEVER. WE WILL NOT UNDER ANY CIRCUMSTANCES BE LIABLE TO ANYONE FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, OR OTHER INDIRECT DAMAGE OF ANY KIND.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

This warranty does NOT apply in the following circumstances: (1) when the product has been serviced or repaired by anyone other than us; (2) when the product has been connected, installed, combined, altered, adjusted, or handled in a manner other than according to the instructions furnished with the product; (3) when any serial number has been effaced, altered, or removed; or (4) when any defect, problem, loss, or damage has resulted from any accident, misuse, negligence, or carelessness, or from any failure to provide reasonable and necessary maintenance in accordance with the instructions of the owner's manual for the product.

We reserve the right to make changes or improvements in our products from time to time without incurring the obligation to install such improvements or changes on equipment or items previously manufactured.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

REMINDER: You must retain the sales slip or sales receipt proving the date of your original purchase in case warranty service is ever required.

EAGLE ELECTRONICS
PO BOX 669, CATOOSA, OK 74015
(800) 324-1354

How to Obtain Service...

...in the USA:

We back your investment in quality products with quick, expert service and genuine Eagle replacement parts. If you're in the United States and you have technical, return or repair questions, please contact the Factory Customer Service Department. Before any product can be returned, you must call customer service to determine if a return is necessary. Many times, customer service can resolve your problem over the phone without sending your product to the factory. To call us, use the following toll-free number:

800-324-1354

8 a.m. to 5 p.m. Central Standard Time, M-F

Eagle Electronics may find it necessary to change or end our shipping policies, regulations, and special offers at any time. We reserve the right to do so without notice.

...in Canada:

If you're in Canada and you have technical, return or repair questions, please contact the Factory Customer Service Department. Before any product can be returned, you must call customer service to determine if a return is necessary. Many times, customer service can resolve your problem over the phone without sending your product to the factory. To call us, use the following toll-free number:

800-661-3983

905-629-1614 (not toll-free)

8 a.m. to 5 p.m. Eastern Standard Time, M-F

...outside Canada and the USA:

If you have technical, return or repair questions, contact the dealer in the country where you purchased your unit. To locate a dealer near you, visit our web site, www.eaglesonar.com and look for the Dealer Locator.

Accessory Ordering Information for all countries

To order Eagle accessories such as power cables or transducers, please contact:

1) Your local marine dealer or consumer electronics store. Most quality dealers that handle marine electronic equipment or other consumer electronics should be able to assist you with these items.

To locate an Eagle dealer near you, visit our web site, and look for the Dealer Locator (www.eaglesonar.com/Products/HowToBuy/dealers.asp). Or, you can consult your telephone directory for listings.

2) U.S. customers: LEI Extras Inc., PO Box 129, Catoosa, OK 74015-0129

Call 1-800-324-0045 or visit our web site www.lei-extras.com.

3) Canadian customers can write:

Lowrance/Eagle Canada, 919 Matheson Blvd. E. Mississauga, Ontario L4W2R7 or fax 905-629-3118.

Shipping Information

If it becomes necessary to send a product for repair or replacement, you must first receive a return authorization number from Customer Service. Products shipped without a return authorization will not be accepted. When shipping, we recommend you do the following:

1. Please do not ship the knobs or mounting bracket with your unit.

2. If you are sending a check for repair, please place your check in an envelope and tape it to the unit.

3. For proper testing, include a brief note with the product describing the problem. Be sure to include your name, return shipping address and a daytime telephone number. An e-mail address is optional but useful.

4. Pack the unit in a suitable size box with packing material to prevent any damage during shipping.

5. Write the Return Authorization (RA) number on the outside of the box underneath your return address.

6. For your security, you may want to insure the package through your shipping courier. Eagle does not assume responsibility for goods lost or damaged in transit.

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Eagle Pub. 988-0143-751

Printed in USA 102604

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